Today's Health

PUBLISHED BY THE American Medical Association

January 1960 FOR THE AMERICAN FAMILY 35¢

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VOLUME 38 NUMBER 1

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The usual school assignment is fine, says one educator, if you want your child to be taught as you were taught—by drill and drudgery. But many frustrated parents are beginning to rebel against the "busy work" and memory routine. Don't miss this article on how to make homework more meaningful and enjoyable.

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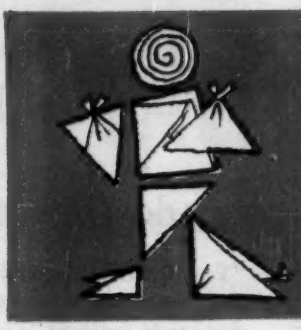

first aid

by CARL J. POTTHOFF, M.D.

SHOCK IN WINTER

During the winter, fires, falls, traffic accidents, and sports are frequent causes of injuries that may result in shock. Measures to protect the victim may be complicated by the fact that the accident occurs in cold weather. The following precautions should be kept in mind while waiting for medical help:

Conserve Body Heat: In winter the question at once arises of how much covering the victim should have. The tendency is to use too much, rather than too little. The victim should be kept on the edge of feeling chilly; this will prevent marked loss of body heat but will not warm the skin surface and dilate blood vessels. Accordingly, the skin should be pale rather than flushed (though some head injury victims have flushed skin even though no covering is applied). Application of hot water bottles is usually inadvisable. Use of excess covering is especially harmful if a long period elapses before a doctor can arrive, as may be the case after highway accidents in the country. However, much body heat can be lost if the victim is lying on a cold surface, and one or more blankets should be placed under him in these instances.

Keep Victim Lying Down: When dealing with severely injured persons, the error of having the victim sit or stand rather than lie down is probably greater than that of overcovering him. The victim should be kept flat.

Move Carefully: Unless great care is taken in moving the victim from a hazardous road or from an automobile, injuries may be made worse and the shock danger increased. For good shock first aid, manipulate the injured person as little as possible, keep questions to him at a minimum, solve his problems of the moment if possible, and avoid measures that cause pain.

Giving Water: If medical help will come soon, water is not needed; if there is a long wait; it is necessary. When roughly more than a half hour elapses, water should be considered for such persons as those who have suffered marked bleeding, burns involving more than 10 percent of the body surface, fractures of large bones, etc., and for those who are definitely thirsty and pale. Water should not be given if the victim is unconscious, has a penetrating abdominal wound, is nauseated, vomiting, or faces an early operation. When giving water, try sips at first to test the victim's tolerance. If nausea does not develop, give a third or half a glass every 10 or 15 minutes. After the patient has taken a goodly amount in these little doses, say four half-glasses within an hour, water need not be pushed unless there is a definite thirst. Alcohol is not advisable.

SHOCK—What It Is

Shock commonly results from wounds and accidents and can be thought of as a state in which there is too little blood in the body for good health. This lack may be caused by a decrease in blood volume, as in bleeding from an injury; blood volume may also be reduced by the loss of water and salt, as from sweating in heat exhaustion. Shock also results from an increase in the total capacity of the blood vessels, for example, in instances of severe pain. Most shock cases involve both loss of blood and an increase in blood vessel capacity. Signs of shock are pallor, clamminess of the skin, low blood pressure, feeble and rapid pulse, restlessness, anxiety, and sometimes, unconsciousness.

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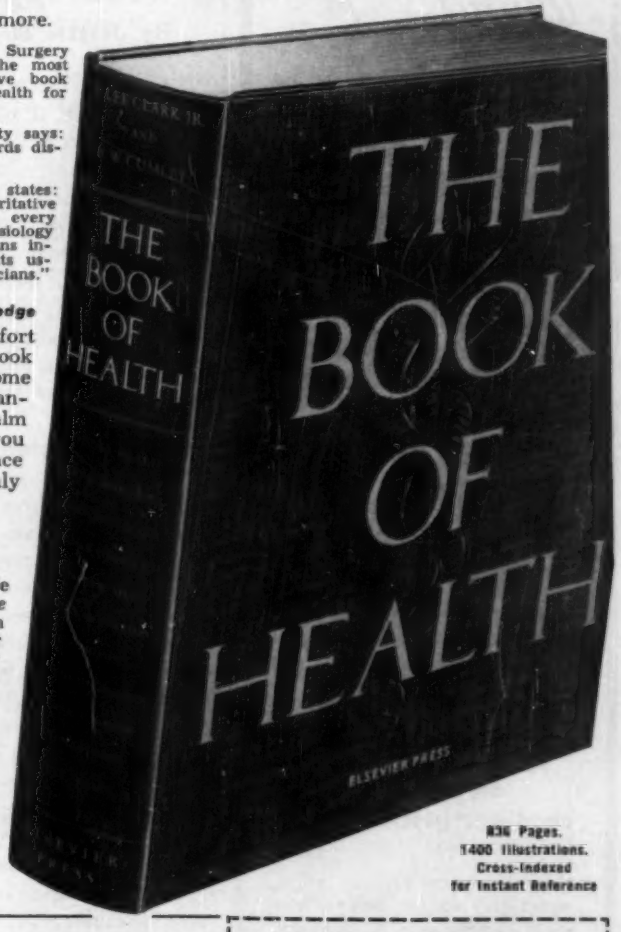

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Science Looks at Your Fears

by JOHN E. GIBSON

EVERYONE is plagued with his share of fears and anxieties. And scientists in universities and research foundations have been putting them under the clinical microscope to see what makes them "tick," and what we can do about them. Their findings provide answers to many questions you've wondered about, and also let you see how your own anxieties stack up with those of fellow Americans.

What are the chief fears of most Americans?

A study of a cross section of middle-class Americans conducted by the Illinois Institute of Technology showed the most common fear to be anxiety over financial matters. This included concern over the possibility of losing their jobs, worry about making ends meet, living beyond their means, and coping with unpaid bills.

Other chief fears included anxiety about health, concern over making the right impression on business and social contacts, worries over marriage problems (compatibility, etc.), fear of personal inadequacy, and lack of confidence.

Is it true that fear is highly contagious?

Yes. At the University of California, 22 psychiatrists participated in a study which showed fear to be even more contagious than most people suspect. Just being near a fear-ridden person can cause you to be vaguely fearful without knowing why.

The tests showed, for example, that you can be instantly affected just by listening to voice recordings of anxiety-ridden persons. The investigators conclude that many of our fears do not originate with us at all, but are actually generated in the minds of other people.

There is much clinical evidence as to the existence of contagious apprehension. And investigators have found that virtually no one is immune. Psychiatrists contract fear from their patients; children catch it from their parents; and animals catch it from human beings. An infant in its mother's arms will begin to cry when the mother is frightened.

How does fear affect our mental processes?

Mild anxiety merely hampers your ability to think and reason clearly. But extreme fear can paralyze your thinking processes completely, can literally "scare the wits out of you." In extreme stage fright, for instance, everything goes blank.

Fear also tends to severely handicap the memory processes. Under extreme stress, a person may be unable to remember even such things

as his birth date or the name of his closest friend. And studies conducted at Indiana University and the University of Colorado show that even relatively mild states of anxiety definitely impair learning, perception, and ability to discriminate.

Are women more fearful than men are?

University of California researchers report that women not only have more fears, phobias, and anxieties, but they are more profoundly affected by them than men are. Other studies show that this same difference exists in children; girls' misgivings and apprenhensions lead boys' by a considerable margin.

How does fear affect most people physically?

It depends on the extent of the fear and the type of person. Scientists at Yale University studied the fear-reaction of hundreds of persons from various walks of life, found that most people react with a pounding heart. But fear shows itself in many other forms. Here are typical reactions in order of frequency of occurrence:

1. Pounding heart and rapid pulse.
2. Sinking feeling in the stomach.
3. Dryness in mouth and throat.
4. Trembling.
5. Sweating of palms.
6. Cold sweat all over the body.
7. Prickling sensation of scalp and back.
8. Faintness or a weak feeling.

Do a man's fear and anxieties tend to follow a definite age pattern?

Yes. A study of a typical cross section of American businessmen showed this to be a typical pattern: From 25 to 30, his chief anxiety is a fear that his dress, manner, and general appearance may not make the desired impression on others. In his early 30's, most of his worries arise out of conflicts and/or temptations involving sexual morality. Between 33 and 35, worries over philosophical or spiritual convictions become most pronounced. With the advent of his middle 30's, financial fears take the center of the stage. As he approaches his 40's his anxieties shift their focus to his health, his job, and domestic difficulties. After his mid-40's, he feels a greater tranquility about things in general, and his fears tend to resolve themselves, with no more pronounced upswings.

Do fear and anxiety make you more subject to physical pain?

Yes. A state of anxiety actually makes any type of ache or pain hurt more. If your mind is overwrought, it will overevaluate pain impulses, causing you to feel more pain than necessary. On the other hand, when your mind is calm it evaluates pain impulses on an appreciably lower scale. Tests show that up to 75 percent of the pain which is felt when a person is tense and jittery vanishes entirely when he relaxes.

If you were a psychologist, would you be better able to cope with your fears?

The odds are you wouldn't. Investigators at the Illinois Institute of

(Continued on page 82)

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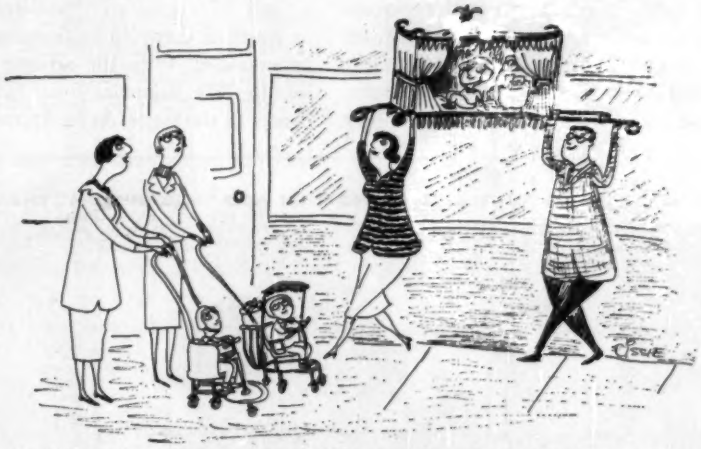

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A: June 1, 1959.

Q: Does the new rate change the Bonds I bought before June 1, 1959?

A: All older E and H Bonds pay more now—an extra ½% from now on, when held to maturity. The increase takes effect in the first full interest period after June 1.

Q: Will the Bonds I own automatically earn their new rate?

A: Yes. You don't need to do a thing—just hold on to your Bonds.

Q: When my E Bonds mature, will they keep on earning interest?

A: Yes. An automatic 10-year extension privilege went into effect along with the new interest rate. This means your E Bonds will automatically keep earning interest after maturity.

Q: With the new interest rate, should I cash in my old Bonds and buy new ones?

A: No. The automatic ½% increase makes it unnecessary—and in almost every case it is to your advantage to retain your present Bonds.

Q: How safe are U.S. Savings Bonds?

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Today's Health News

by ALTON L. BLAKESLEE

Power of the Mind: Emotional states can influence the course of physical disease, and such psychic effects in cancer deserve more research, says Dr. Eugene P. Pendergrass, president of the American Cancer Society. He tells of persons successfully treated for cancer who are well for years; some emotional stress comes along and their disease flares up again with lethal effect. He expresses hope that the quest to control cancer can be widened "to include the distant possibility that within one's mind is a power capable of exerting forces which can either enhance or inhibit the progress of this disease."

Cancer Survival: Women seem to have twice the chance of surviving cancer that men do, an American Cancer Society survey of 8079 persons finds. Among women, 37 percent survived five years or longer from the time of first diagnosis, compared with only 20 percent of the men. One main difference is that lung cancer is the most frequent type of malignancy in men, and only three percent of its victims live five years. Breast cancer is the most prevalent form in women, and 50 percent live five years or more. The survey added evidence that chances are best when the disease is detected and treated early.

Normal Activity After Rheumatic Fever: Physical activity does not have to be restricted after recovery from rheumatic fever, report Dr. Alvin R. Feinstein and associates, Irvington House After-Care Clinic, New York. In a survey of 168 patients, the heart conditions of those who had limited their activities were found to be neither better nor worse than those who had kept a normal schedule. In fact, those who had been limited had more emotional or psychological problems.

Reducing Heart Damage: Animal tests indicate that damage to the heart muscle from a heart attack could be reduced by 25 to 50 per cent through the use of clot-dissolving chemicals, researchers find. The chemicals are enzymes such as fibrinolysin or plasmin. They apparently flush away a "sludge" which forms throughout areas of the heart muscle which are deprived of blood and oxygen when a coronary artery is shut down, said a medical research team from Sloan-Kettering Institute, New York.

Building New Lips: A new lower lip can be constructed in one operation by using skin, fat, muscle, and nerves taken from the cheeks, report Drs. Richard C. Webster, Richard J. Coffey and Robert E. Kelleher of Brookline, Massachusetts. They have performed the operation on 34 persons, aged 22 to 73, whose lips had to be removed due to cancer.

Daily Dunking Unnecessary: Babies don't have to be bathed every day -- twice a week is often enough except in hot weather, says Dr. Seymour L. Hanfling, dermatologist of East Orange, New Jersey. Babies and young children have little oil secretion and don't develop body odor. And, he adds, don't make the bath too long, for prolonged immersion dries the baby's skin.

Warning on Vitamin E: Be skeptical about wild claims for products purporting to supply you with vitamin E, the Food and Drug Administration cautions. The

(over)

daily diet supplies the average person with more than enough and supplements aren't needed. The FDA has taken court action against vitamin E products promoted for use in such conditions as sterility, heart disease, and muscular dystrophy.

Male Poundage Up: Compared with a generation ago, American men now tend to weigh more, and women less, on the average. This is one finding from a huge study of some five million insured persons conducted by the Society of Actuaries. The study provides additional evidence that being overweight involves the risk of premature death. The study also finds that even relatively small boosts in blood pressure over the average for given ages leads to danger of shortened life.

How Many Babies? A machine which measures electrical activity of the brain can tell in advance whether a woman will have a single baby, twins, or triplets, three physicians write in the AMA Journal. The device can record electrical activity of the unborn babies' hearts, thus telling how many are in the womb, and do it far earlier than x-rays can, said Drs. C. A. Novotny, W. K. Haas, and D. A. Callagan of the U. S. Naval Hospital, Portsmouth, Virginia. An accurate diagnosis of triplets was made at 20 weeks of pregnancy.

Vaccines From Russia: Soviet scientists have developed promising new vaccines against mumps, measles, and influenza, reports Dr. A. A. Smorodintsev, of the Institute of Experimental Medicine in Leningrad. Each is made from living viruses which have been weakened or altered so as not to cause disease, but which still possess ability to stimulate immunity. The mumps vaccine, injected under the skin, has been given to 200,000 children and shows 90 percent protection, he said. The measles vaccine is still in the early stages of testing. The flu vaccine is sprayed into the nose, and like any other flu vaccine has to be tailored to meet the particular type of virus which is prevalent.

Cigarette Smoking: Educational efforts to prevent cigarette smoking, especially by young people, are urged by the American Public Health Association in a new resolution. Terming cigarette smoking a major factor in lung cancer, the association says that if present trends continue lung cancer "will claim the lives of more than one million present school children in this country before they reach the age of 70 years."

Fighting Air Pollution: "Air is a limited resource, and pollution concerns everyone," declares the Air Hygiene Committee of the American Public Health Association. It quotes James P. Dixon, president of Antioch College, who said "if gas masks are not to become as common in 100 years as shoes are today...we should remember that air is still essentially for breathing." One way individuals can help is to control their own automobile exhaust fumes, faulty heating plants, and by not burning trash and leaves.

These news items, gathered for *Today's Health* by a veteran science reporter from sources where serious scientific work is being carried on, are reported as interesting new developments, and should be read as such. Obviously no "endorsement" by the American Medical Association is implied by the publication of news items. —Editor

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TRY WINTER WATER SKIING FOR FUN

Tired of the winter? Want to get out and try your hand at summer sports? Go ahead. Get a rubber suit and try winter water skiing.

REAL DEVOTEES of water skiing hate to quit when cold weather comes—so they simply don specially-made, watertight, rubber suits, recruit a few hardy friends, and go at it.

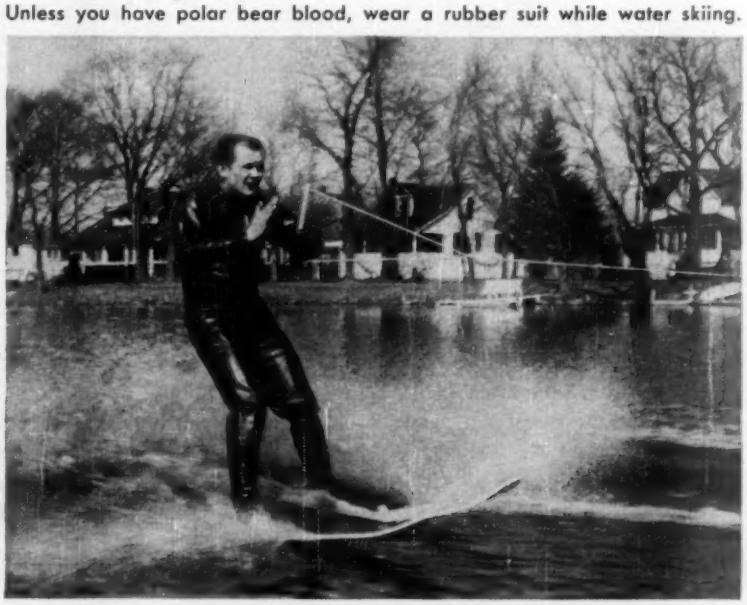
The skiers wear heavy socks and long underwear under the rubber suit and this keeps the body heat from escaping even though the temperatures are freezing. Gloves and a hood complete the costume of what a well dressed water skier wears during the cold months.

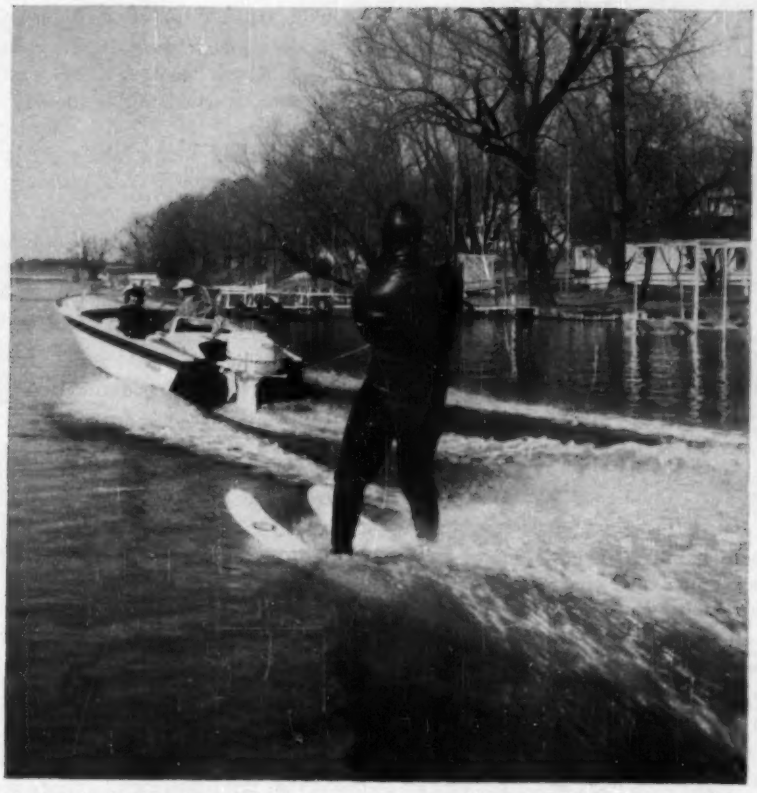
If signals are carried out correctly between the boat driver and the skier, the skier will only get wet to the knees. Starting from a dock rather than in deep water keeps the skier out of the cold water. Once in a skiing position there is little difference between summer and winter skiing; except the weather may be colder.

The biggest danger to winter water skiers is floating debris and chunks of ice. Late winter-early spring waters have more than the usual amount of floating trash, and the skiers must be ready to dodge around different kinds of flotsam.

Skiers may practice their tricks, or go over jumps. In fact, jumping in a rubber suit is even better since the suit offers protection in falls. Boats and motors don't require any special attention for winter cruising. All in all, cold weather water skiing is exciting sport. END

Unless you have polar bear blood, wear a rubber suit while water skiing.





He's off for a nice cool ride. Once in a skiing position, there is little difference between summer and winter skiing, except that it might be colder.

The fun is over for today. A sizzling cup of coffee and a warm smile from a pretty young lady helps to chase the shivers of winter water skiing.

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That's a good QUESTION

Edited by WILLIAM BOLTON, M.D.

Blood Test for Cancer

Why has it not been possible to perfect a blood test for cancer like the many other tests for different diseases?

Almost every year, one or more blood tests for cancer are reported in the medical literature, but none seems to satisfy all the basic requirements. Such a test should be indisputably accurate as to both the presence and absence of cancer.

There is always the possibility of false positive findings, with the patient subjected to extensive fruitless examination as well as the extremely disturbing experience of having such a threat constantly in mind. At the other extreme, a false negative report might result in missing treatment that could save a life.

The American Cancer Society's seven warning signs of early cancer could save many more lives than they do if they were kept in mind and heeded promptly by everyone.

Heating and House Dust

What is the best method of heating a home to protect a person who is allergic to both house dust and drafts?

Unless proper precautions can be taken to insure distribution of dust-free air through the house, perhaps it would be best to select some form of radiation in preference to use of hot air.

Ordinary hot water radiators probably would be satisfactory, but there might be a tendency for dust to collect under these, as well as on the radiator leaves. This is eliminated by wall or floor heating.

There is no house that can be described as absolutely draft-proof because air leaks in around windows unless special provisions have been made to seal these. Some air will enter through the chimney, as well as the doors whenever they are opened, but if windows are kept shut this problem could be kept at a minimum.

Exercise Trouble

My wife is going through an exercise craze that both bores and annoys me because she thinks I should get into the act. What can I do to persuade her I get enough exercise in my daily work as a salesman?

It appears enthusiasm for exercise can sometimes be overdone. You might point out to your wife that all of the countless body movements that occur in whatever we do, even sitting quietly in a chair, provide exercise for certain muscles. You could add up an impressive total, starting with the exercise of getting out of bed, dressing, washing, shaving, brushing your teeth, and eating breakfast.

The chief purpose of exercise is refreshment, though many people think they have not exercised unless they are virtually exhausted. Doing something different is always interesting, and therefore going through a set of mild exercises is useful. However, exercising vigorously cannot be expected to restore the vitality of anyone who is dead tired to begin with.

As a salesman, you probably do

Doctor Bolton, associate editor of TODAY'S HEALTH, is also associate director of the American Medical Association's Department of Health Education. In that capacity, he answers each month an average of 1300 inquiries, from which these are selected.

much standing and walking. If these are done properly, with proper shoes and avoidance of slouching, they represent a considerable amount of exercise.

You might join your wife in her exercises nevertheless. It will show her you are physically fit and help her keep the calisthenics within reasonable limits.

Pasteurizing Cheese

Would it be best to use only cheese that has been pasteurized?

If the cheese is made from unpasteurized milk the Food and Drug Administration has specified that it must be cured "at a temperature of not less than 35° F. for not less than 60 days." Studies have shown that this procedure is sufficient to destroy any disease-producing organisms that may have been present in the milk. We believe there is no cheese on the market that fails to meet safety requirements.

Underarm Perspiration

For many years, I have been bothered with large amounts of perspiration in my armpits. I have tried many antiperspirants to no avail. In fact, some seem to make the trouble worse. I do not have excessive perspiration in other parts of my body. Has anything been discovered in recent years that might be of help?

We cannot be certain without having an opportunity to examine you, but your comments suggest this is an inherited characteristic. In most such conditions, satisfactory treatment is difficult.

Most antiperspirants contain aluminum salts or some similar astringent that causes the skin in the area to shrink, closing off the openings of the sweat glands. The effect is only temporary at best, and some people may experience irritation.

In the last few years, various drugs that inhibit the activity of sweat glands have been introduced.

You might talk over with your personal physician the possibility of your being given one of these for a trial. They may produce annoying side effects such as dryness of the mouth,

(Continued on page 19)

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That's a Good Question

(Continued from page 17)

blurring of the vision, and dizziness.

In extreme situations, superficial x-ray treatments sometimes are given. This decision should be made by an x-ray specialist or a dermatologist.

Decline of the Male

It appears that the sexual roles are doomed to a complete reversal if we women don't change our ways. Is it possible men are losing interest in the masculine jobs around the house because of female hormones they get whenever they eat food coming from animals that have been given such products to speed up growth?

Extensive studies have shown that none of the various hormone preparations used to stimulate animal growth reaches the consumer when food has undergone final processing and cooking. The federal Food and Drug Administration keeps careful control over use of hormones by farmers and feeders.

Women are assuming a more important role in the family, but this appears to be due principally to economic factors. Often, it is necessary for both wife and husband to work if their living standard is to be maintained.

With a separate income, the wife may feel she is more important and be less willing to do all the household chores herself. In the sharing arrangement that may result, the husband will be found doing jobs that 50 years ago were considered the full responsibility of women.

Avoiding Medicine

I have been nervous and my doctor has advised me to take a tranquilizer. He says it may be necessary for me to use these from time to time for the rest of my life. Does this mean I will become addicted? I am ashamed to become dependent on medicine, and am afraid to start using this.

We feel sure your doctor is well aware of your need and if you follow his guidance there is no reason why you should hesitate to take the medicine.

It is remarkable that some patients think a certain stigma is attached to taking medicine for control of nervousness. This is simply another condition to which everyone is susceptible in varying degrees. Probably in your case the gradual improvement produced will mean you can decrease the dosage after a time. Your doctor has indicated this in stating you will need it only intermittently.

Actually, you are much better off than a person with diabetes, for example, who must continue taking insulin or some oral medication for the rest of his life, or someone with pernicious anemia who must receive vitamin B_{12} indefinitely.

There is no one who goes through life without requiring medicine at some time and it would be the height of folly to reject the help that is available. This has the same general status as following a good diet to keep the body functioning satisfactorily. With

(Continued on page 21)

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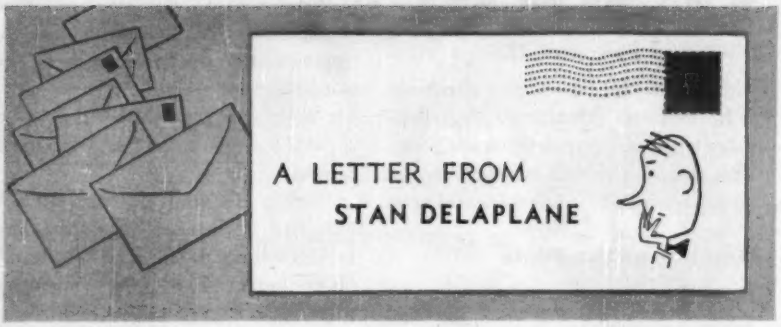


Get a Horse!

IT MAY BE that I am the only living man in the United States who was once run over by an electric automobile. That is not much to show for a long and rich life. But it is something.

It shows for one thing that I am practically indestructible.

A good many people spend their time seeking fame and fortune. Not me. After being run down by that rudder bar monster I saw clearly what I must do. And I have spent the remaining years just staying alive.

I consider this quite a success. Considering the quality of cars Detroit has been throwing at me ever since, I have developed agility.

I am a wily pedestrian. You do not catch me napping in the crosswalk. I am over to the other curb like a rabbit.

For a while, the car designers kept making their cars bigger and faster.

Now they have developed the little sports car. Those are the babies we must watch. They can nip right around the corner and catch you with one foot off the curb.

The best way to infuriate these people is to cross where there is a policeman. Boy, these car drivers are polite as butter when there is a blue uniform around.

They stop and wave you across. They get a sober and sanctimonious expression.

When there is a policeman around, I get my revenge. I wait until the light turns yellow and then step off the curb. I make them burn rubber.

I saunter across the street while the traffic piles up. The cross traffic honks and the taxi drivers scream. I just ease across, lazy-like. No hurry.

I was quite young when I was clobbered by the old electric. In those days about half the cars on the street were stalled. People were forever pulling off to the side of the road and tinkering with the insides.

We would come home from school hanging on the back of the horse-drawn grocery wagon—the grocery wagon boy would sometimes give you a lick with the whip but we learned to jump off and jump on again until he gave up.

When we passed motorists on the side of the street, we yelled: "Get a horse!"

Those were the days.

Anyway, I had just leaped off the grocery wagon when this electric rounded the corner. It was the old glassed-in kind that looked like a carriage. The same in front as in back. It was steered by a sort of rudder.

There was a lady at the rudder bar. And when she saw me, she went to pieces. Clobbering pedestrians was not as ordinary as today.

In any case, I took off ahead of the electric. Dodging one way and another. And the lady came shrieking behind me, steering from one side to the other. She got me on about the tenth jump. Bang!

It did not hurt as I remember. The electric quivered under the shock. Then it went on up the street with the lady fainting over the rudder. I never saw it again.

After a while I got up and went home. I was slightly bruised around the pistol pocket. But I had gained an invaluable lesson: Don't try to outrun them. And to this day, Detroit has not invented a car that can catch this cat. I am not trying to grow old gracefully. I just want to grow old. END

That's a Good Question

(Continued from page 19)

the new products, there is even less chance of habituation developing and certainly there is no chance of addiction.

High-Flying Heart

I have a heart condition and would like to know whether taking a plane flight overseas would be unwise.

There are many different heart conditions, with widely varying degrees of altered heart function, and without knowing much more about your specific case we cannot decide what you may do. Your personal physician is in the best position to advise you.

We must presume you are in reasonably good condition if you are thinking of making an extensive trip. We also presume you will go on one of the many licensed lines in a plane with pressurizing facilities. Thus sea level conditions will be provided regardless of how high the plane might travel.

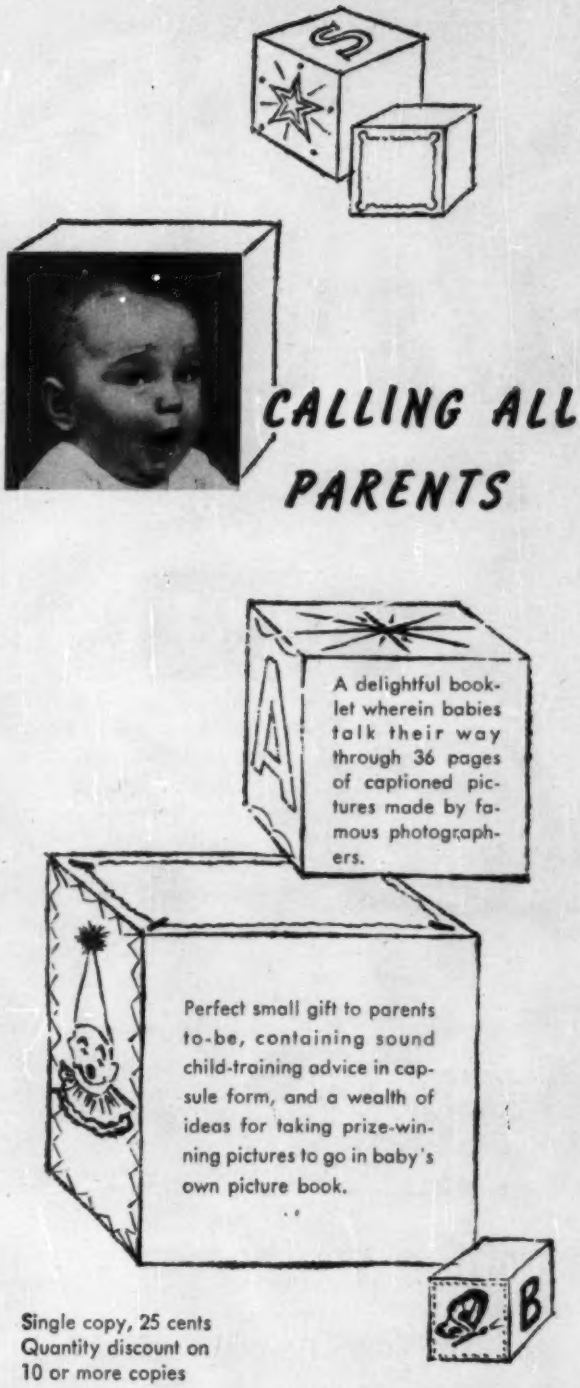
The main problem otherwise would be the decreased oxygen tension at higher levels. For example, at sea level, there is 20 percent oxygen in the air we breathe. At 25,000 feet, this drops to eight percent. Since body demands for oxygen are constant, one must breathe faster and deeper to get sufficient oxygen in such a situation. This requires faster and stronger heart action, which might have an undesirable effect.

Leg Cramps at Night

What causes leg cramps? I get these in one or both legs at night, and have to get up and walk around to ease them. Is there any good medicine for them?

There is no single cause of nocturnal cramps and no treatment that will always be helpful. These are most common in older people and for that reason, changes in the blood supply (due to blood vessel deterioration) usually should be investigated.

Excessive use of the legs on the preceding day is a possible cause that is often overlooked. Prolonged standing or a great deal of walking might be a factor. END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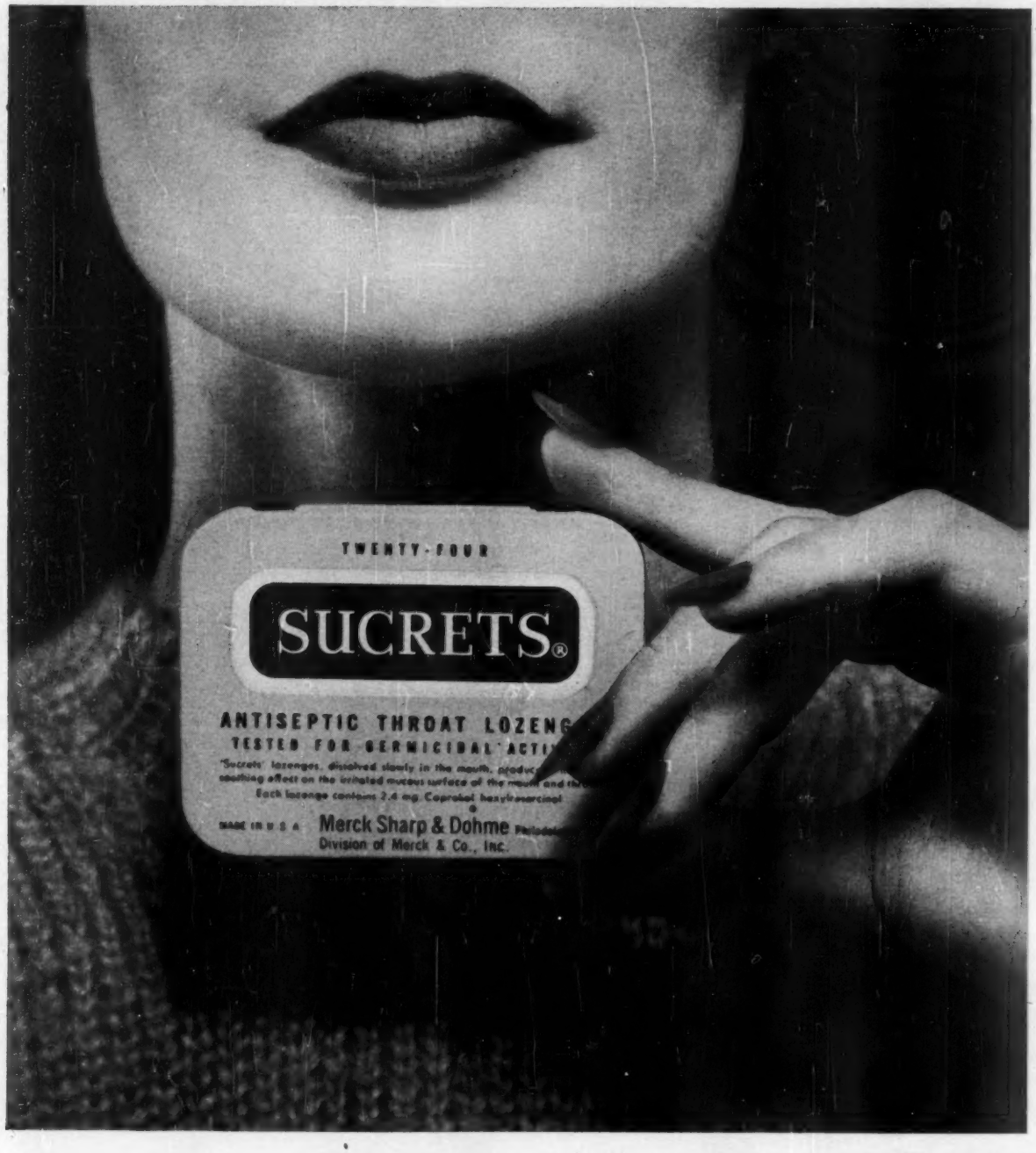

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Your Heart: The "Perpetual Motion" Pump

The Wonderful Human Machine
Chapter Four

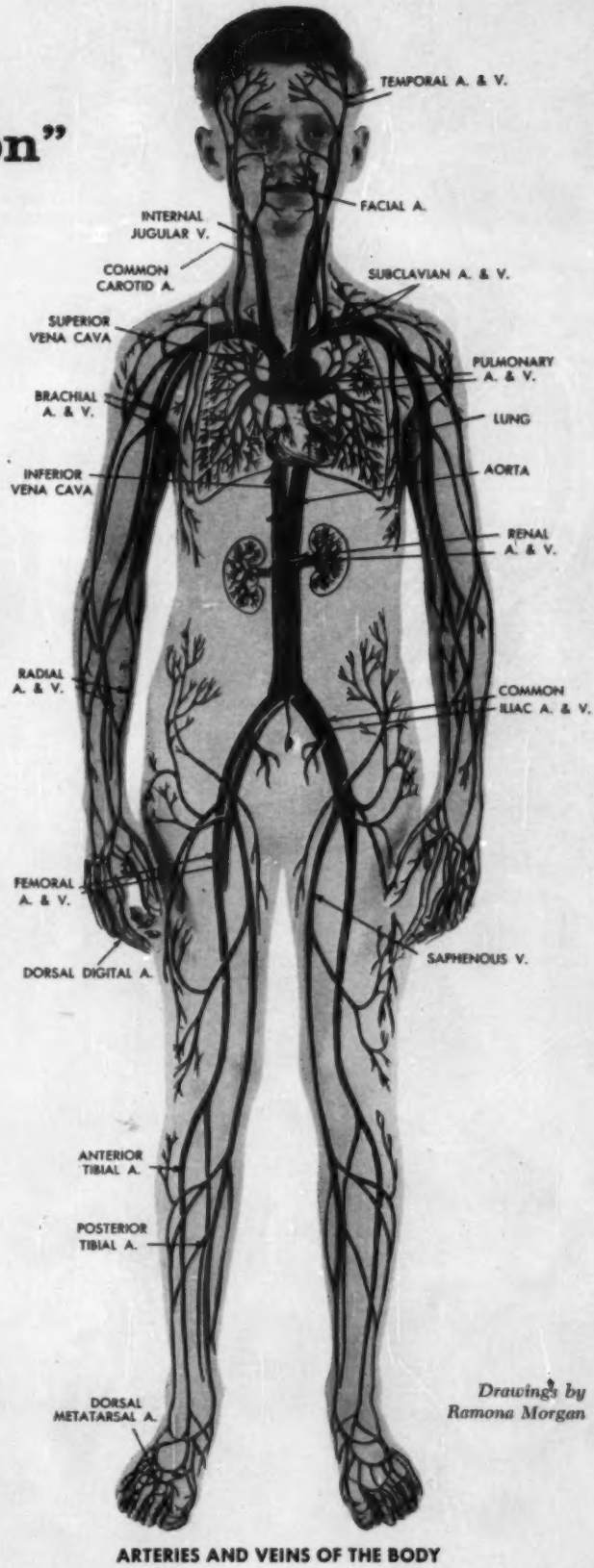
YOUR HEART is a bundle of muscles about the size of your fist. If you clench your fist, open it, then clench it again, you can get a rough idea of the action of the heart. But if you open and close your fist, again and again, at a rate of a little more than once every second, your muscles will feel tired after a couple of minutes. Your heart, meanwhile, is contracting and dilating at an average rate of 72 times a minute, which adds up to about 100,000 times a day or nearly 40 million times a year. And the only rest the heart muscles get is the fraction of a second pause between beats.

The work done by your heart is about equal to the work you would perform if you lifted a 10-pound weight three feet off the ground and repeated this task twice every minute for a lifetime. One scientist has figured that heart muscles work twice as hard as the leg muscles of a person who is running.

The heart has to be very efficient to continue its pumping job, day and night, year in and year out. It is, in fact, more efficient than man-made engines that convert gasoline or coal into mechanical work. The heart converts up to 50 percent of the fuel available, in the form of food, into work. A well-tuned automobile or a steam turbine, by comparison, has a mechanical efficiency of only 25 percent. The heart gets only one-tenth of the oxygen received by the entire body, but no organ uses the oxygen more efficiently. The heart uses 80 percent of its share of oxygen, making it about three times as efficient in this category as other parts of the body.

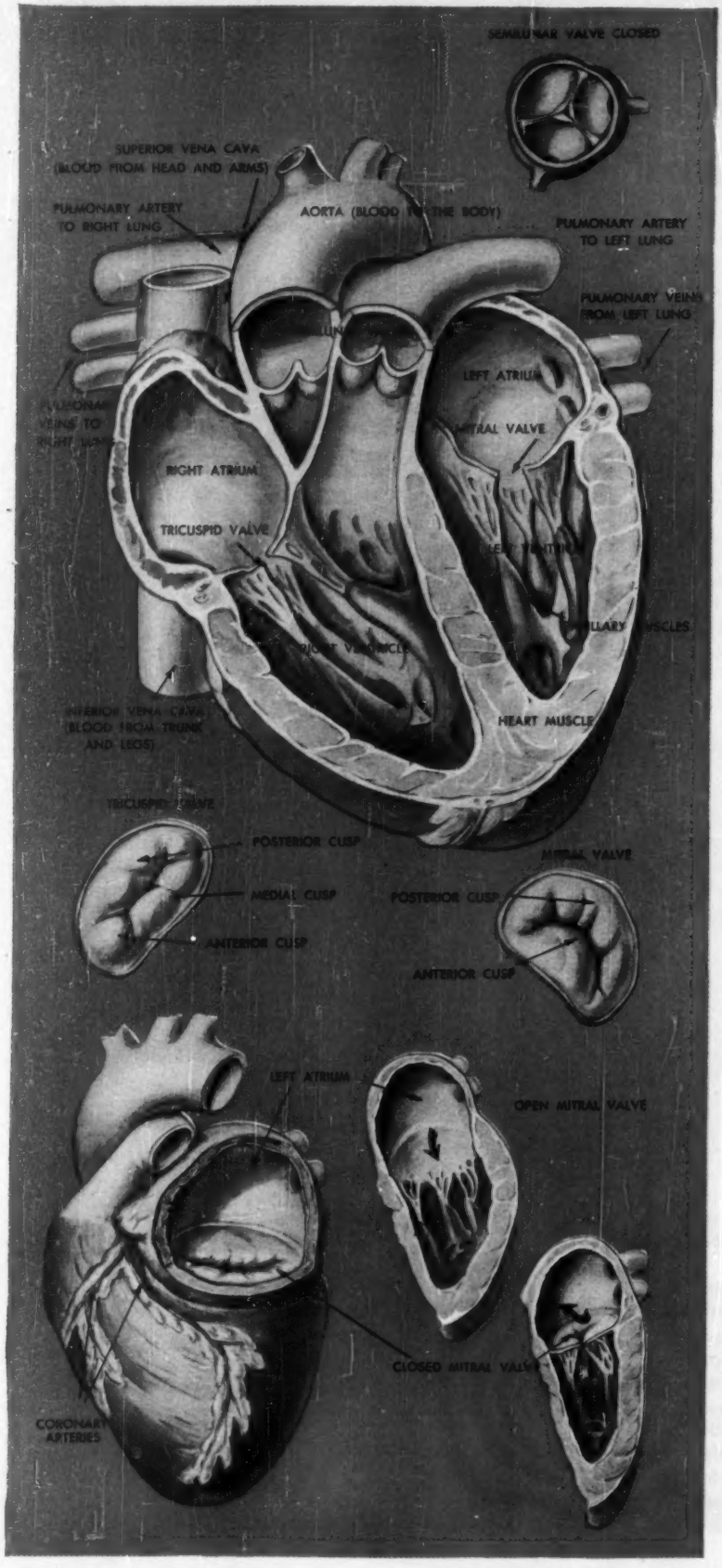
The oxygen is used in large quantities by the heart muscle fibers in burning the fuel that allows the muscles to contract. The heart consists of several layers of muscles arranged in circles and spirals. When the muscles contract, the spirals and circles tighten and the blood is literally squeezed out of the chambers. The contraction that squeezes the blood from the heart is called systole and the relaxation of the heart muscles is called diastole.

The human heart as it appears in the body, behind the breastbone and slightly to the left, may



Drawings by Ramona Morgan

ARTERIES AND VEINS OF THE BODY



resemble only remotely the design of the heart that appears on valentines. A number of large arteries and veins run into the top of the heart, carrying blood to and from other parts of the body. The walls on one side are thicker than the other and the surface is covered with a number of small arteries and veins. The arteries on the surface of the heart are called the coronary arteries. They carry the blood which, in turn, carries the oxygen, food, and other necessary materials to the muscle fibers of the heart. Of the more than 4000 gallons of blood pumped through the heart each day, none is absorbed through the chamber walls.

If we could see the inside of the heart we would find four chambers—two at the top called atria and two at the bottom called ventricles. Each atrium is separated from the ventricle below by a valve. The atrium and ventricle on the right are separated from their counterparts on the left by a wall of muscle called a septum.

By tracing the paths of the blood through the heart, we see that this organ actually is a double pump. Blood flows from the right atrium into the right ventricle (the first pump), which squirts the blood into the lungs. The left ventricle, or second pump, squeezes the blood into the arteries that extend to all parts of the body. The septum prevents blood on the right side from mixing with blood on the left, and vice versa.

The thick ventricle walls do most of the blood pumping. The atria serve mainly as reservoirs, although they do give the blood a boost into the ventricles. A closer look at the pattern of flow shows that "used" blood from all parts of the body reaches the heart through big veins called the *superior* and *inferior* vena cava. The smaller veins from the head and arms drain into the *superior* vena cava. The *inferior* vena cava drains the blood from the lower parts of the body. The venae cavae open directly into the right atrium. The blood which has been used by the heart itself drains into the right atrium through a vessel known as the coronary sinus.

The valve that separates the right atrium from the right ventricle prevents the dark or "used" blood from being

Clip along this line

pushed back into the atrium when the ventricle contracts. This valve is the tricuspid, so called because it has three cusps, or flaps, of tissue. The cusps are controlled by tiny papillary muscles. When the papillary muscles contract, they pull on cords attached to the cusps and thus pull open the valves.

With the tricuspid valve closed to prevent backflow, the right ventricle squeezes the dark blood upward and into the pulmonary artery. The pulmonary artery has left and right branches extending into the lungs on either side of the body. As the dark blood flows into the lungs it circulates through capillary beds—webs of tiny vessels that line the millions of microscopic air sacs. In the air sacs, called alveoli, the blood's red cells exchange carbon dioxide for oxygen. The carbon dioxide is a waste product from the body's tissues. The oxygen helps the tissues perform their various tasks.

The fresh supply of oxygen changes the color of the blood from a dark red to a bright red and it is ready to be returned to the heart. When the blood returns through the pulmonary veins it will enter the left atrium. From the left atrium it will be boosted through the mitral, or bicuspid, valve into the left ventricle. During the next contraction, the fresh blood will be squeezed into the aorta, the great artery from which branches run to all parts of the body. Again, by closing of the valve cusps, the blood is prevented from flowing back into the left atrium.

Valves to prevent backward flow of the blood also are located where the aorta and pulmonary arteries join the ventricles.

Since the left ventricle must squeeze the blood throughout the body, its muscle is thicker than that of the right ventricle, which must only squeeze the blood into the air sacs of the lungs. That is why the left ventricle wall is thicker. The space in the ventricles is the same, however. This is because both ventricles contract at the same time and the volume of blood squeezed into the lungs must be the same as the amount returned.

We should note that arteries always carry blood *away from* the heart and veins return blood *to* the heart. The blood squeezed from the right ventricle to the lungs is dark, "used" blood from the veins, but the path it follows is still an artery. Similarly, the bright red blood from the lungs flows through veins *to* the heart. So it is not always correct to think of an artery as a vessel carrying bright red blood or of a vein as a vessel carrying "used" blood. And although some veins appear bluish in color, there's no "blue" blood.

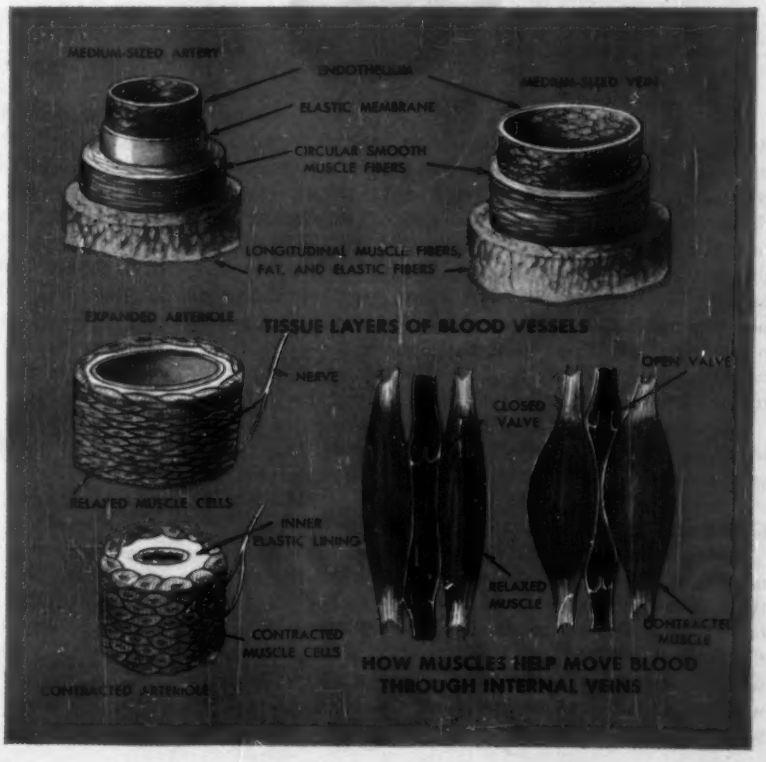
When a doctor listens to your heart with a stethoscope, he hears a series of noises through the chest wall. They sound like lubb-*dup*. The second, or *dup*, sound is shorter and higher-pitched than the lubb sound. The lubb is caused by the "slamming" shut of the valves between the atria and the ventricles and, at almost the same instant, the contraction of the ventricles. The *dup* sound is made by the closing of the semilunar valves in the aorta and pulmonary arteries.

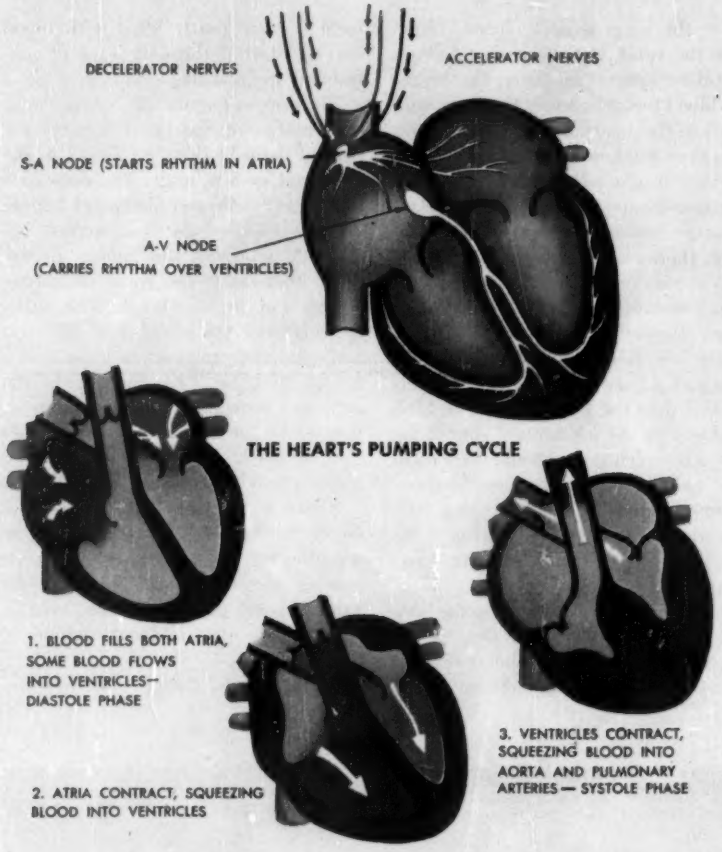
There is a pause between the *dup* and the next lubb sound. During this fraction of a second, the heart rests. It occurs between the time the ventricles have become partly filled with blood and the start of the next wave of contraction of the atria.

The approximately 72 beats per minute rhythm of the heart begins in a knot of tissue in the atria known as the sinoatrial, or S-A, node. The node contains nerve cells and fibers and muscle cells. It is called the "pacemaker" because it generates the "spark" or impulse that starts the wave of muscle contraction in the heart. The wave spreads over the muscles of the atria and apparently triggers an impulse in a similar node near the junction of the atria and ventricles. The second, atrial-ventricular, or A-V, node has branches that run to each of the ventricles and into the papillary muscles of the valves.

There is no direct connection between the S-A and A-V nodes, and the impulse travels more slowly after it reaches the ventricles. This accounts for the short pause between contractions of the atria and contractions of the ventricles.

If the impulse between the S-A and




DECELERATOR NERVES
ACCELERATOR NERVES
S-A NODE (STARTS RHYTHM IN ATRIA)
A-V NODE
(CARRIES RHYTHM OVER VENTRICLES)
THE HEART'S PUMPING CYCLE
1. BLOOD FILLS BOTH ATRIA, SOME BLOOD FLOWS INTO VENTRICLES— DIASTOLE PHASE
2. ATRIA CONTRACT, SQUEEZING BLOOD INTO VENTRICLES
3. VENTRICLES CONTRACT, SQUEEZING BLOOD INTO AORTA AND PULMONARY ARTERIES — SYSTOLE PHASE

A-V nodes is interrupted by disease or injury the ventricles will continue to contract but at a much slower rate. The rhythm of the atria may continue at a rate of around 70 beats a minute but the ventricle rhythm may be only half as fast. This condition is called heart block, although the ability of the A-V node to continue the contraction of the ventricles independently is one of nature's safety factors.

Sometimes the rhythm of the heart muscle breaks down and the fibers contract at random. The lack of coordination of muscle contractions is called fibrillation.

Although the vagus and accelerator nerves send fibers into the heart muscle, they control only the rate of the heartbeat. The heartbeat is generated within the S-A and A-V nodes and the heart will continue to beat if the connections with the central and autonomic nerve systems are cut. The vagus nerve has the effect of slowing the heart rate while the accelerator nerve increases the rate. The nerves regulating the heartbeat are, of course, stimulated by many things. Your emotions can cause your heartbeat to increase. So can the amount of carbon dioxide in your bloodstream.

Several external effects of the heart's pumping action help doctors study the condition of the heart and the circulatory system. One is the sounds of heart action heard through the chest wall with a stethoscope. Another is the "recoil" effect that we may see when we stand very still on a bathroom scale and watch the needle on the dial move with the rhythm of the heartbeat. The recoil of the heartbeat is like the recoil a hunter feels against his shoulder when he fires a shotgun, except that it is, of course, much smaller.

The pulse is caused by the blood pressure impact on the arteries as the heart beats and can be felt by placing a finger on the radial artery, at the wrist. Doctors can tell much about the strength and regularity of the blood flow by feeling the pulse of a patient.

After vigorous exercise, your pulse may speed up from around 72 beats per minute to more than 120. But it should return to the original 72 within three minutes.

Blood pressure also permits doctors to study the health of the heart and circulatory system without actually viewing the organs. Each contraction of the ventricles (systole) causes the blood to spurt through the arteries and increases the pressure of blood flow. During the relaxation part of the rhythm (diastole), the pressure decreases.

To measure the systolic and diastolic pressures, an airtight rubber cuff is wrapped around the arm over the brachial artery. The cuff is connected to a glass tube filled with mercury. Air is pumped into the cuff until it becomes just tight enough to stop the flow of blood in the artery. As the doctor gradually lets the air out of the cuff, just enough blood will squirt through the artery to make a sound that can be heard by placing a stethoscope on the arm. The reading on the tube of mercury at which the first squirt sound is heard will be recorded as the systolic pressure. It will follow the peak of contraction of the heart.

As the doctor continues to reduce the air in the rubber cuff, the sounds heard through the stethoscope will become louder and louder, as more blood squirts through. Finally, the pressure of the rubber cuff will be nearly deflated, the artery will no longer be squeezed, and blood flow will be normal. The sounds will cease. But the point where the sounds are loudest, before they stop, will indicate the diastolic pressure.

If the systolic pressure is 120 and the diastolic 80, it will be written as 120/80.

From the heart, blood surges through the aorta to the arteries throughout the body. From the arteries, smaller vessels called arterioles branch out. From the arterioles, the blood flows to the smallest vessels, the capillaries. The capillaries carry the blood to the individual

Clip along this line

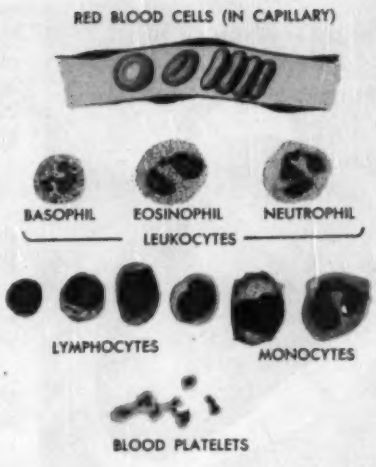
cells of the body where oxygen and other chemicals are delivered and waste products are collected. The capillaries then connect with venules, which run into veins which, in turn, flow into the venae cavae.

Except for the microscopic spaces between the cell walls of the capillaries, the blood flows through a sealed conduit of vessels that would total some 60,000 miles if placed end-to-end. The lining of the system is a membrane of cells called endothelium. The endothelium is so thin that even when magnified a thousand times it appears no wider than a chalk mark. But it forms the smooth inner layer of the heart and all the blood vessels.

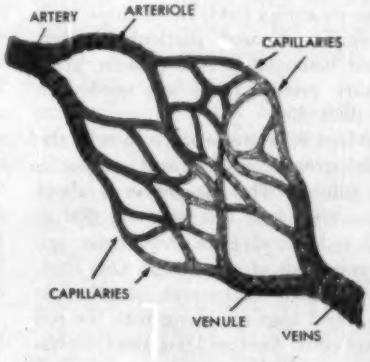
The arteries have layers of smooth muscle cells, elastic fibers, and connective tissue. One layer of muscle cells is circular and another layer of muscle fibers runs lengthwise. In the larger arteries with thick walls, smaller arteries run through their layers of muscle and fibrous tissue. Nerve fibers also accompany the muscle fibers that control the size of the opening in the arteries. The arterioles are barely visible without a microscope. They are constructed of a single layer of endothelial cells with an outer layer of muscle cells. The veins are built somewhat like arteries except their walls generally are thinner. A vein has an inner layer of endothelial cells, a layer of fibrous tissue, and a layer of muscle cells. The venule has an inner layer of endothelial cells and an outer layer of fibrous tissue.

The blood flow from the arteriole to the capillary is controlled by a circle of muscle fibers called a sphincter. The capillary system is so vast that if all of its vessels were opened at one time, they could swallow up the body's entire supply of blood. Yet the individual capillaries are so small that the red blood cells have to pass through them in single file. The red blood cells are, in turn, so small that a line of 3000 of them would fall a little short of an inch in length.

It has been estimated that the human body contains 70,000 miles of blood vessels. Of this total length, the largest percentage by far is capillaries. They could, as we pointed out, hold the body's entire blood supply (about five quarts). But only a part of the capillary system has blood flowing through it at any instant. The capillaries open and close first in one area, then another. Tissues that use more blood, such as the arm and leg muscles, contain a greater share of capillaries than tissues that are not as active.



The endothelial walls of a capillary are solid enough to keep the red cells from leaking out of the "closed circuit" of blood vessels. But white cells, chemicals, and small amounts of liquid can leave the blood stream by squeezing through tiny openings between the cells that make up the walls of the capillary. The blood flow is very slow at this point. It would take a minute for the blood to go through an inch of capillary tube. (Blood travels through the arteries at a speed of more than 40 miles an hour.) But during the slow trip through the capillaries, the food and oxygen needed by the body cells leave the tiny blood vessels and go into the tissues. A liquid, lymph, that bathes the tissue cells also trickles through the capillary walls, as do the ingredients needed for repair and maintenance of the tissues.



At the same time, the carbon dioxide and other waste products from the tissue cells enter the capillary and are carried away. The lymph seeps into a special set of capillaries which return it eventually to the blood through a special vein near the heart.

The dark, used blood in the upper part of the body can flow downhill from the capillaries to the heart. But what about the blood that has finished its trip through the capillaries in the hands and feet? Nature has provided for the need to push the used blood back up to the heart by two unique devices. One is the location of the veins between the skeletal muscles. The other is a system of valves which permit used blood to flow only toward the heart.

Good examples of these devices can be found in the legs. The veins in the legs seem to weave among the muscles so that when each muscle contracts, it squeezes a vein. Squeezing the vein pushes the blood closer to the heart. The valves in the vein prevent the blood from flowing backwards when the muscle relaxes.

If we spend too much time standing or sitting in one position, the used blood from the lower part of the body does not get the push it needs to return to the heart. That is why we may experience fatigue or sluggishness after standing still for a long time or after a long ride in a car or train. Varicose veins result from a failure of the used blood in the legs to return to the heart at the proper rate. The veins may lose some of their elasticity or the valves may fail to close properly. The used blood then accumulates and causes the veins to swell. Varicose veins occur frequently in the legs of people whose jobs require that they stand a great deal.

So far, we have discussed the "plumbing" of the circulatory system —the pumps, the pipes, and the valves. Now, let's look at the blood itself.

When blood is taken from the body and studied in a laboratory, it can be

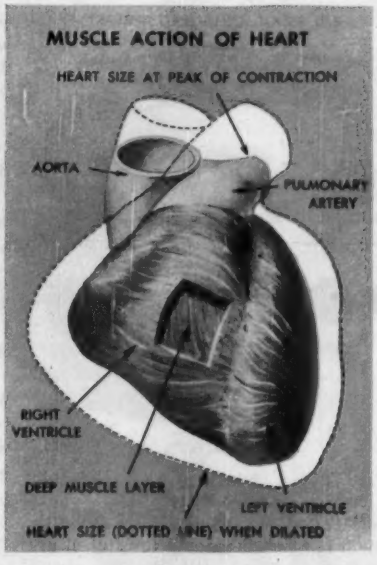
separated into two main parts. A little more than half of the blood is a watery fluid called plasma. The remainder is composed of red blood cells, white blood cells, and platelets.

The red cells give blood its color. They are tiny disks, so small that you could hide 40 or 50 of them beneath the period at the end of this sentence. They are thinner in the center than along the edge—which permits them to fold over when passing through an opening smaller than their own diameter. The human body contains nearly 25 trillion red cells. Each lasts only four months. They simply wear out and break up in the blood. New red cells are produced by the bone marrow at the rate of around one million a second and they wear out at the same rate.

Red cells are colorless when they are first produced. The color is acquired just before the cells are released into the blood stream. It comes from an iron pigment which is combined with a protein. The chemical combination is called hemoglobin. It is the hemoglobin that carries the oxygen from the lungs to the capillaries, where it is released to the individual tissue cells. The hemoglobin also attracts carbon dioxide and carries it in the red blood cells to the lungs, where it is exhaled.

Because of the ability of hemoglobin to hold large quantities of oxygen, animals can be smaller and more efficient than if the plasma itself had to carry the oxygen. For hemoglobin enables the blood to move up to 60 times as much oxygen as would be possible if the oxygen had to be dissolved in water or plasma. In other words, without hemoglobin, humans would need up to 300 quarts of blood—instead of just five—in order to live on this planet. Even the muscles contain hemoglobin. It permits the muscles to build up a reserve of oxygen for the spurts of energy release we need when running, playing, or working hard.

The oxygen is held very loosely by the hemoglobin. In simple terms, the hemoglobin acquires a lot of oxygen when oxygen is abundant—as in the lungs after you inhale. And the hemoglobin gives up its oxygen when it reaches a region where oxygen is scarce—as in the areas where the capillaries branch among the tissue cells.



Carbon dioxide similarly is picked up by the hemoglobin where carbon dioxide is plentiful and released in the lungs, where it is comparatively scarce. Unfortunately, hemoglobin also is strongly attracted to carbon monoxide, the poison gas that comes from automobile exhaust and faulty furnaces. The carbon monoxide crowds the oxygen out of the hemoglobin and the body tissues literally suffer from oxygen starvation.

When the number of red cells in the blood is too small or the red cells do not contain enough hemoglobin, the body is not able to get the proper amount of oxygen. The muscles and other tissues are not able to burn all of their supplies of fuel. The result is that the body can't get the energy it needs and we call this condition anemia. If anemia is caused by a lack of hemoglobin, the shortage can be overcome by eating foods rich in iron, such as eggs and meat, particularly liver. Since hemoglobin is a protein, good quality protein foods are needed in the daily diet.

White cells are less common in the blood stream, but they still number in the billions. The proportion is about one white blood cell for every 600 or 700 red blood cells. And there are several kinds of white cells. One kind, the granular leukocytes, develop in the blood marrow, along with the red blood cells. Another kind, the lymphocytes, develop in the lymph nodes, tonsils, and adenoids. The leukocytes play an important role in defending the body against the invasion of bacteria. These white cells can move around and literally chase down the bacteria.

As we mentioned earlier, the white cells can even squeeze through tiny openings in the walls of capillaries. When they corner bacteria, they engulf and digest them. One result of the battle is pus—a thick yellowish fluid composed of lymph, bacteria, and dead white cells.

Blood platelets are much smaller than red blood cells. They help blood to clot, or coagulate. When a blood vessel is cut, the platelets collect at the site of the injury. Many of the platelets break into smaller pieces and a complicated chemical process follows. Almost instantly, tiny threads appear from the platelets. The threads, called fibrin, form a tangled mass with the blood cells and platelets. This is the clot. The red blood cells give the clot its dark color.

The platelets do not perform the task of clotting by themselves. Chemicals in the injured tissue cells, the white cells, and the plasma are used by the body to form a clot.

The plasma is about 90 percent water. The remainder is made up of minerals, such as sodium, calcium, potassium, and phosphorus, plus enzymes, antibodies, fats, sugars, and the plasma proteins. The plasma proteins include fibrinogen (one of the clotting chemicals), albumin, and serum globulins. Some oxygen and carbon dioxide are dissolved in the plasma.

When blood is lost, because of injury or disease, it can be replaced by transfusion. The blood is obtained from another person, but the blood of the donor must be compatible with that of the person receiving the transfusion. The main types of blood are classified as A, B, O, and AB. If the types are not compatible, the transfused blood cells may form clumps that can block the small vessels. It also is necessary to differentiate between Rh-positive and Rh-negative blood. If incompatible blood is given, serious consequences may result. ☆☆☆

Next month: Chapter Five—The Lungs.

Clip along this line

The new National 4-H Club health winners announced last month include (left to right) Sally Swartout, Janet Winn, Patricia Schofield, Phyllis Seebeck, Lucia Feliciano, Charlotte Sivert. Each won a $400 scholarship.

THE FOURTH H

"I pledge my Head to clearer thinking, my Heart to greater loyalty, my Hands to larger service, and my Health to better living, for my club, my community, and my country."—National 4-H pledge.

SIX YOUNG LADIES from the United States and Puerto Rico were designated National 4-H Club health winners last month at the 38th National 4-H Club Congress held in Chicago. Each girl was presented a $400 scholarship as recognition of her outstanding activities in health improvement work.

"I feel very proud of the work I have done, but I feel I can do more for the welfare of my people," says Lucia Feliciano. She became a health leader for her club in Puerto Rico, and she helped with local fund drives.

Fifteen-year-old Patricia Schofield, a Fallon, Nevada, high school sophomore, conducted a program aimed at better personal and community health which culminated in the obtaining of free milk for schools in her county. She also aided the county nurse in an immunization survey, and she made safety posters.

Phyllis Seebeck, 18, Choctaw, Oklahoma, won her award by assisting in numerous health drives. During one campaign she contacted almost 2000 persons. One of her major community achievements was the placing of trash cans around her home town.

Charlotte Sivert, from Gate City, Virginia, won her award in the fields of personal, family, and community health. She improved her own physical condition, was responsible for checking contaminated water in her home, and helped her community by displaying posters in school and writing for the school paper.

Sally Swartout, Newark, Delaware, high school senior, was the health leader of two 4-H clubs. After a mild case of polio, she followed doctor's orders, took up swimming and life saving, and a Red Cross home nursing course.

"Taking care of our bodies is common sense," says Janet Winn, 18-year-old winner from Madison, Missouri. In the past two years, she has obtained booklets on nutrition and good grooming for her club, and has distributed health record cards to 4-H members, their families, and others. END

ONE WAY
CANDY
Bob Brunton

Delinquency's "Bad-Company" Myth

Behind parents' fears of bad company is another culprit—bad circumstances. "Good homes" can produce delinquents when youngsters get together with insufficient supervision in situations too new or too difficult for them to handle.

by HOWARD WHITMAN

THE AVERAGE PARENT trusts his own child. It's the other kids he's worried about. Here's how one father expressed it: "My boy's a good kid. He wouldn't do anything wrong—not by himself. Of course, if he got in with bad company . . ."

"Bad company" is a haunting fear to millions of parents. They're afraid that their own *good child* may fall in with bad companions who will lead him astray, with nasty ringleaders who will bring down an avalanche of trouble, with juvenile no-goodniks who will turn the head of a good boy or girl toward bad habits and wrongdoings.

Such fears are not without grounds.

"Good kids" from good families have gotten into pecks of trouble of late.

In White Plains, New York, eight youngsters (five of them girls) poured gasoline on the floor of a house under construction and set it ablaze. It burned to the ground. "And these were all kids from nice families," the heartbroken builder commented. "I don't understand it. It seems the better off the families are the less rein they have on their children."

In Atlanta, Georgia, four boys from a well-to-do section flabbergasted the town with what they called a "thrill tour." They went around late one Saturday night releasing emergency brakes on automobiles and watching them careen down hills. One car smashed into a garage, one into a stone wall, one into a utility pole, one overturned, one catapulted into a ravine, and two crashed into parked cars.

In Los Angeles, a police official, ticking off a list of car thefts, school wreckings, and even an occasional hold-up by kids from the right side of the tracks, commented, "It's youngsters from the so-called good homes who are causing us a lot of trouble these days. We used to think bad actors came exclusively from the slums and broken homes. Believe me, a lot of them today come from the nicest homes in town. I don't know what gets into these kids."

What *does* get into them?

Only the parents seem to have a ready answer. "Bad company," they say. They repeat it with a hundred variations.

"George would never do a thing like that—unless those other rascals put him up to it."

"My Gladys is a good girl. She'd never do anything wrong. It's that bunch she meets at the drug store—they've turned her head."

"Believe me, I've learned my lesson. I'll never let my boy get in with that crowd again. They're the cause of it . . ."

Yes, *bad company*. Bad company every time.

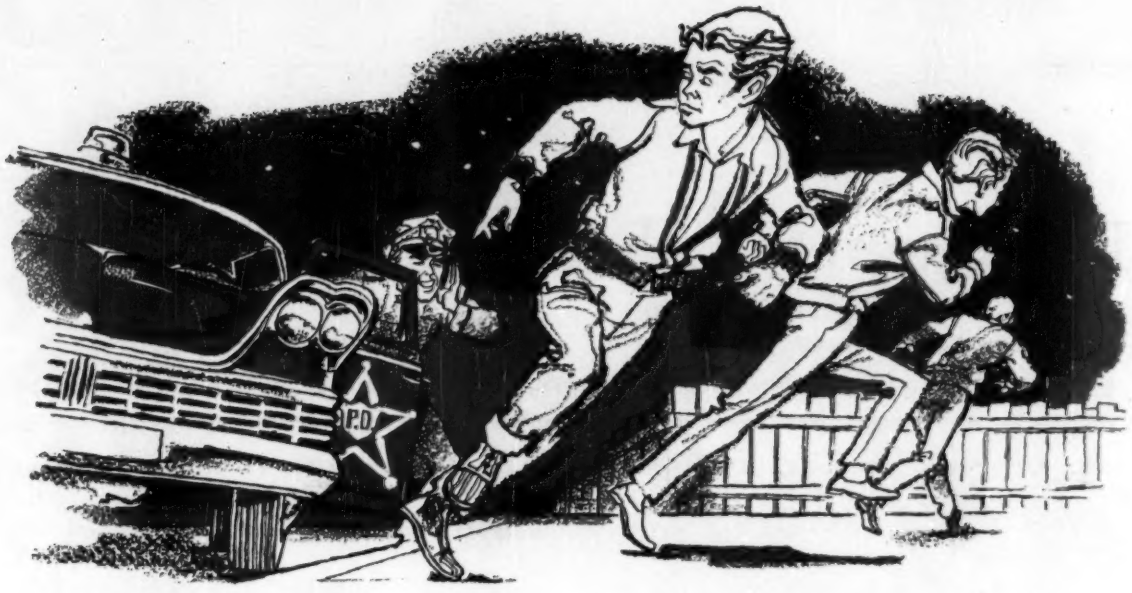
That's the parents' ready answer. But how valid is it? What do you find out when you investigate the other youngsters in the group? What do their parents say?

In Cincinnati, six boys got into a house which was temporarily closed while the owners went on vacation. The boys declared open season on everything in sight. They ripped up the carpets, overturned furniture, tore an expensive clock off the wall, broke chairs, made a shambles out of the kitchen.

Suppose we use this as a guinea pig case. What were the facts in the background? Five of the boys had never been in any kind of trouble with juvenile authorities before. One was on record in juvenile court for what an official called "a very minor infraction." All six came from good, solid families. The parents were college graduates, and one boy's father was a law enforcement official.

"When we talked to the parents we immediately ran into the bad company merry-go-round," reported Juvenile Court Supervisor Julian Benjamin.

"Each set of parents blamed the other children. We made the complete circle, interviewing six sets of parents and ending up right where we started—



with every parent contending that his child was a 'good boy' but had fallen in with bad company."

This going round in circles was obviously no solution to the problem. But it does suggest that there is something deeper in the matter of bad company which needs probing. Perhaps it is not the pat answer many parents thought it was.

"Our experience in Cincinnati is that bad company is greatly overrated," commented John F. Bookman, director of Juvenile Court Services for the Hamilton County Youth Center. He explained:

"We're confronted with it nearly every day. We find that the parents of each child coming to us blame other youngsters for the acts of their own child. It's pretty obvious, after study, that this alibi doesn't hold. We certainly can't blame each child in a group for being bad company for every other!"

JUVENILE Court Judge Nathan Kaufman of Detroit finally got tired of the bad company routine. He was weary of being the intermediary while parent after parent said, "My boy (or girl) is a good child. It's the others who led him astray." So Kaufman decided to let the parents confront each other!

The case involved five teen-age boys with a long list of bad acting to their discredit. There, before Judge Kaufman, was a police record showing four automobiles stolen and nine homes broken into and vandalized. And there, also before him, were the five boys and five sets of parents. He called each set of parents separately into his chambers and five times he heard the same theme, with variations: "He'd never do that by himself," "He's a good boy," "It's those others."

Judge Kaufman came back into the courtroom, assembled all the parents before him, and announced, "I want all you parents to have a little talk with each other. I'm going out to lunch now. You are welcome to get together in my chambers. We'll see how the situation looks when I get back."

Ten chastened parents greeted the judge on his return. Each had learned that his "good boy" was considered bad company by the others and that in turn, each of the other boys whom he considered bad company was a "good boy" to his own parents. One father spoke up to the judge.

"We've learned, your honor, that passing the buck to the 'other bad boys' is no answer," he said.

The judge congratulated him on learning a basic truth. Bad company is not what many parents think it is. It's not one good youngster being led astray by other "bad" ones. It's an entire group of potentially good youngsters being led astray by *bad circumstances*. What we commonly think of as bad company is not actually a particular boy or girl, or group of kids, but rather a phenomenon that occurs in any group of youngsters when the circumstances are so inclined.

Good kids in bad circumstances—that's what bad company really is.

HOW many times do parents say, "My child would never do that if he were alone?" They're quite right. Neither would any of the other youngsters. The individual boys and girls are all right; it's when they get together under the wrong circumstances that they themselves go wrong.

Judge Dale F. Shughart, of Carlisle, Pennsylvania, has concluded after vast experience in juvenile cases, "It is the situation in which children find themselves that brings about bad experiences. That's what we really mean by bad company."

Parents, then, have their work cut out for them. If they want to protect their children from bad company, their attention should be riveted not so much on the other youngsters in the group as on the

circumstances in which youngsters get together. "Where is my child?" and "What is he doing?" are more important questions than "Whom is he with?"

Youngsters desperately need their parents' help (call it supervision, if you wish). The world is large and complicated, and much of it is new to them. When we turn a child loose in circumstances beyond his experience, we are unfair to him. When we turn him loose in circumstances beyond his control, we are asking for trouble.

ELIZABETH Chapin of the Community Service Society of New York comments, "We know that youngsters may go off on strange tangents when they find themselves together in new and unfamiliar circumstances. Boys who may be very good citizens and come from good families may encourage each other—either with dares or for the sake of showing off—to perform some pretty anti-social acts."

Parents can equip such youngsters with a very serviceable shield. Judge Shughart calls it "the courage to say no."

Imagine for a moment a particular situation: Jim, your son, is out in the evening with three of his buddies. They have stopped at an ice cream stand, they have met some girls coming out of a movie and kidded around for a while, they have wandered up the street and enviously watched some hot-rodders gunning a jalopy. In short, they have been "hacking around," as the current generation puts it.

Suddenly, one of the boys makes a suggestion. "Let's find a car that's not locked. C'mon, we'll just drive it around the block a couple of times and put it right back!"

It doesn't matter which boy made the suggestion. The important thing is how the others react to it. For the suggestion itself is a challenge. Its unspoken implication is, "If you don't go along you're chicken!" And so, many a youngster, even though he doesn't want to, may tacitly or even openly agree—just to show he has courage.

What would your son Jim do? Have you talked such a situation out with him? Have you let him know that you understand a youngster's wanting to show courage, that you certainly agree courage is an admirable quality? And have you also pointed out that in such circumstances it takes a great deal more *real* courage to say no than it does to say yes?

". . . Think of it, Jim. When you say yes you're not really showing courage. You're showing fear—fear that the others may regard you as a square, a goodie-goodie. But you certainly know that taking a car, even for a little joy-ride, is wrong. It's theft in the eyes of the law. And it's a terrible responsibility for what might happen, even in a little spin around the block. So if you've got *real* guts, you stand up for principles you believe in and know to be right. You say *no*. And that's real courage."

Judge Shughart suggests that all parents take such "positive steps to show that the real chicken is the one who lacks courage to say no to some foolhardy suggestion."

The Henry Street Settlement in New York has launched what it calls a "Pre-delinquent Gang Project." Its premise is that bad company is a red herring, that delinquency actually stems from good children in groups (or gangs) doing what none would do individually.

Recognizing the natural inclination of youngsters to clique together, the Henry Street Settlement gives them a natural setting for following the inclination. They are given clubs, the constructive equivalent of gangs, to devote themselves to wholesome worthwhile objectives while at the same time getting their full kicks out of cliquing up.

But that's just a start. Working with the parents is just as important as working with the kids. Project Director Ruth Tefferteller comments, "One of the most important steps in the corrective process is helping parents to re-assert their influence and authority.

PARENTS seem to show less interest in their children's social life outside the home after the youngsters are eight or nine years old," she continued. "We strongly recommend that parents keep up with all of Junior's activities and especially that they show continuous recognition of his social achievements."

But how closely should a parent keep tabs on his son's or daughter's doings? As closely as possible, says Miss Tefferteller. Even a few hours of a child's leisure time which cannot be accounted for can mean the beginning of trouble, she tells parents.

"But," a father complains, "I can't keep that close tabs on my child. He'll think I'm meddling."

"On the contrary," Miss Tefferteller replies, "a positive and hospitable interest in the child's choice of friends and a friendly concern as to how they're getting along can convince your child that he's important and what he's doing is always significant."

Many youngsters feel abandoned by their parents. Behind their facades of independence, their masks of self-sufficiency, they yearn for parents who are interested in them—for they know intuitively that interest is an essence of love.

In New Orleans I talked with a boy of 15 who had run away from home. "My father doesn't care a darn about me," he said. "He doesn't even care whether I'm alive or dead." And that was the source of his grievance against the whole world.

In San Francisco I talked with many youngsters in the gangs which roam the Mission District. A slight, sensitive 16-year-old remarked, "You think I wouldn't rather be home than hackin' around? I would if home was *(Continued on page 87)*

Dentist tries to make friends with Lisbeth, shy in an unfamiliar situation.

A Child's First Trip to the Dentist

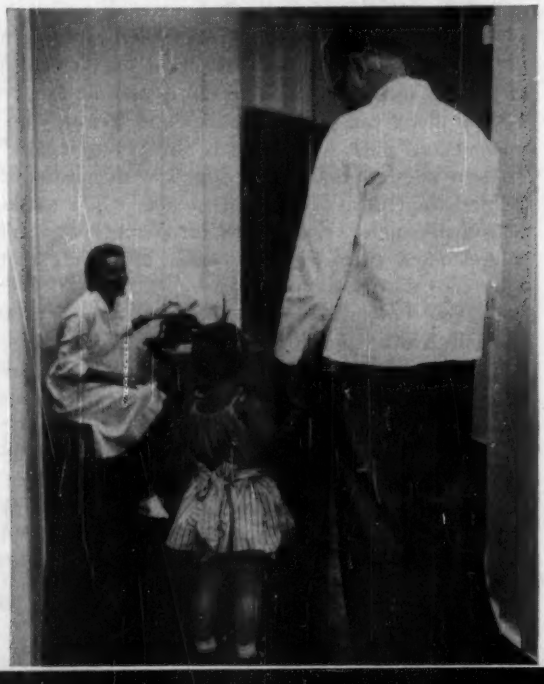
Don't wait for an emergency to take your child to the dentist. He should go when all his primary teeth have erupted—at age two-and-a-half to three.

by DOROTHY REED

A CHILD'S first visit to the dentist can be a frightening experience, or it can be a pleasant one in which a lifetime of good dental habits is established. Pedodontists say that their most difficult patients are children of eight or nine who have had no previous dental care. Not only do their teeth need attention, but they have built up fears they have learned from their parents or friends.

The first visit should be without pain or problem—a child's first appointment will usually involve nothing more than an examination and cleaning of the teeth, and will leave no unpleasant memories. Then the dentist can establish a good relationship with his small patient, and set a pattern of cooperation and confidence. An x-ray may be taken to show whether the teeth are developing properly and to uncover any diseased conditions.

He leads her by the hand to meet dental assistant who does everything possible to make the child comfortable.



If the patient lives in an area where the water does not contain enough fluorides, an application of fluoride solution to the teeth is also advised on the first visit. Although fluoridation treatments are only a partial preventive, they have reduced tooth decay in large groups of children.

A surprising number of first patients need dental attention, however. It is estimated that half of all two-year-olds have at least one cavity. These primary teeth should be taken care of before they are damaged seriously; an infected tooth can be a menace to health in a child as well as an adult.

If your child has developed an attitude of fear don't try to argue it out of him, shame, or ridicule him. A better approach is to introduce him to the positive aspects of good health. Explain to him the value of good teeth. Here are some other tips:

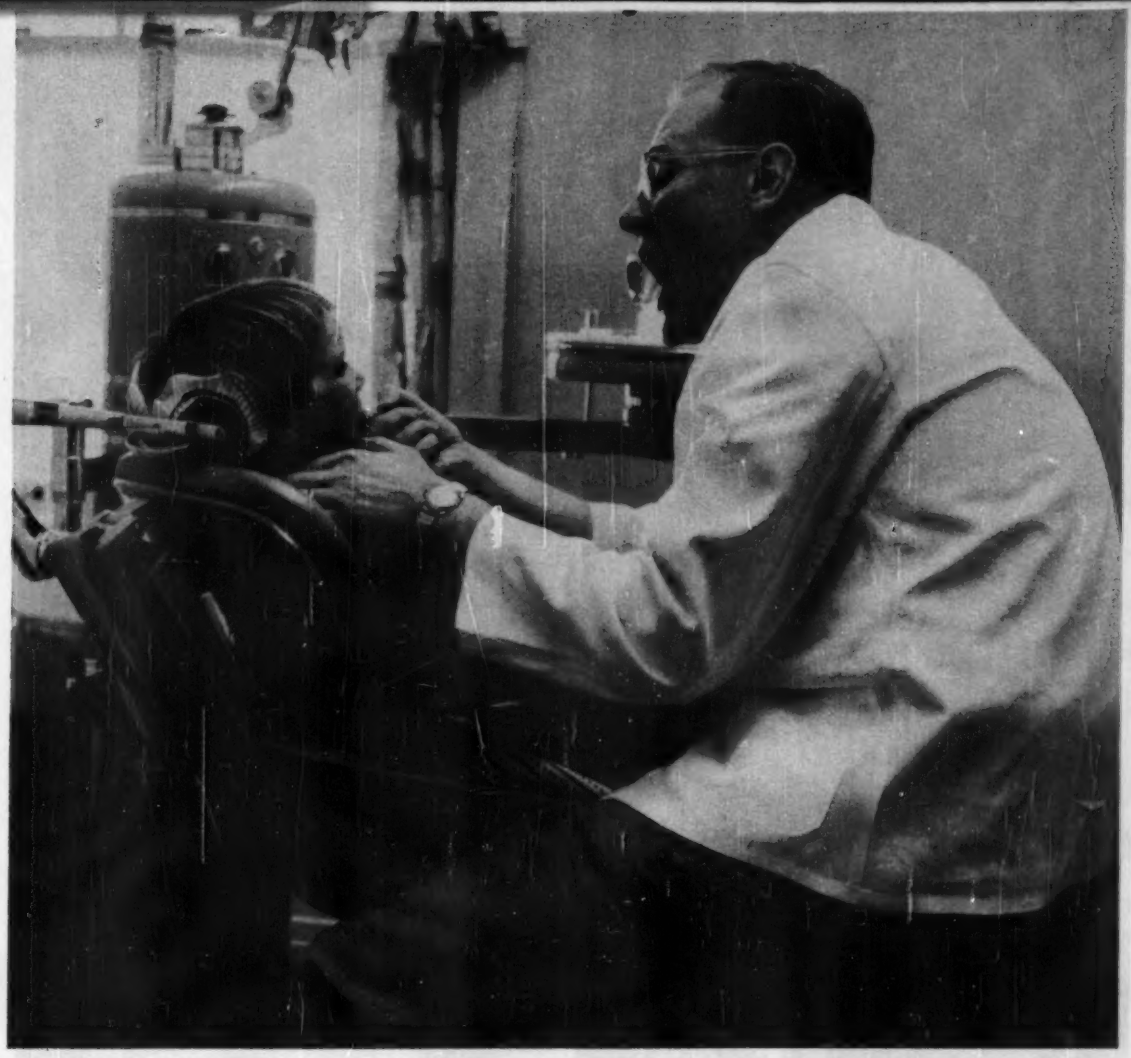
—Let the child stay in the dentist's room alone. However, give him a feeling of security by emphasizing the fact that you'll be in the waiting room.

—Make an early morning appointment, if possible. Children are likely to be more cooperative at that time of the day.

—Never offer the child a bribe for going to the dentist. If he feels he has to be bribed, he'll be especially wary of the dentist.

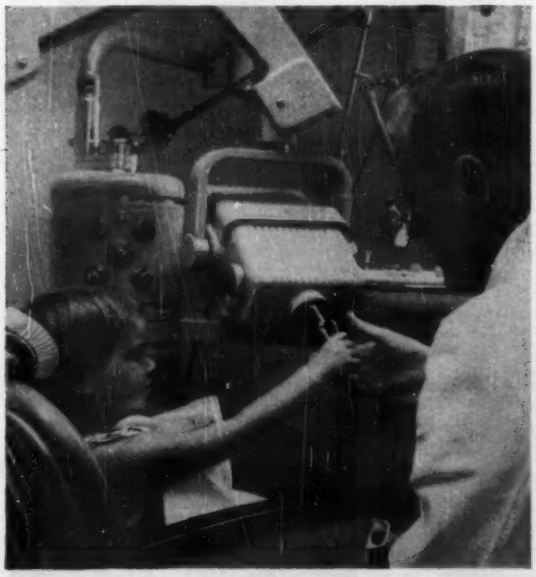
—Once you take the child to the office, let the dentist do the talking. He may use magic, television, or recorded stories to distract the child during treatment.

If you're new in a community or if you don't have

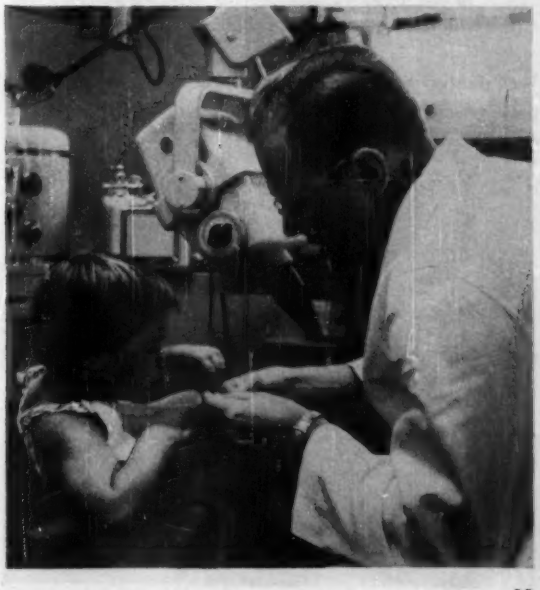


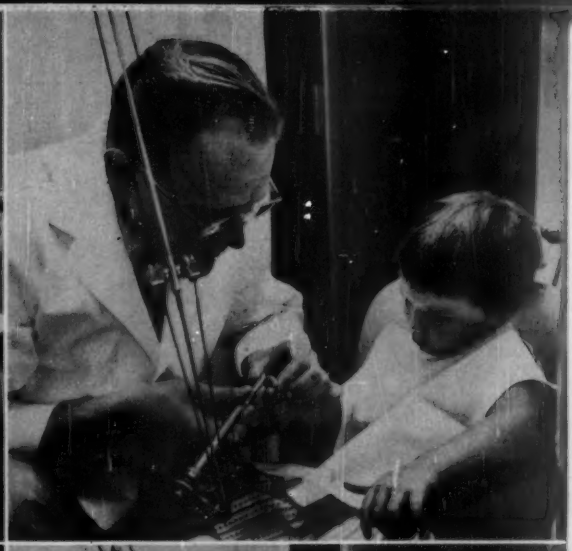
After Lisbeth sees the dentist's chair, she and dentist play a game of counting teeth; he makes a record of them.

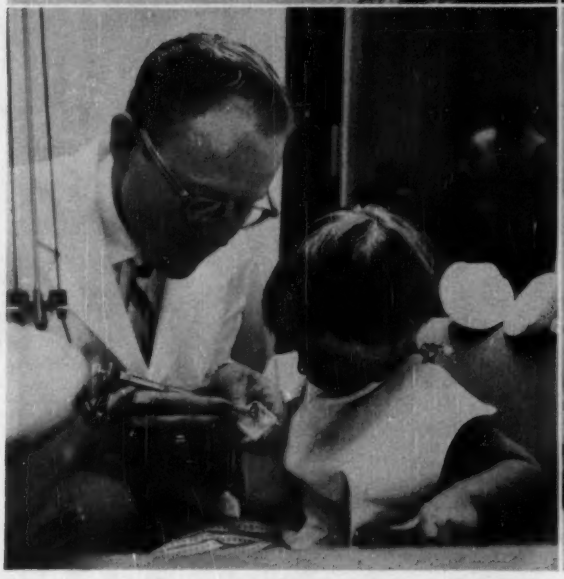
Then he shows her his x-ray machine and explains it will take small, black photographs of all of her teeth.



Lisbeth inspects and touches the x-ray plates and promises to hold still while the pictures are being taken.





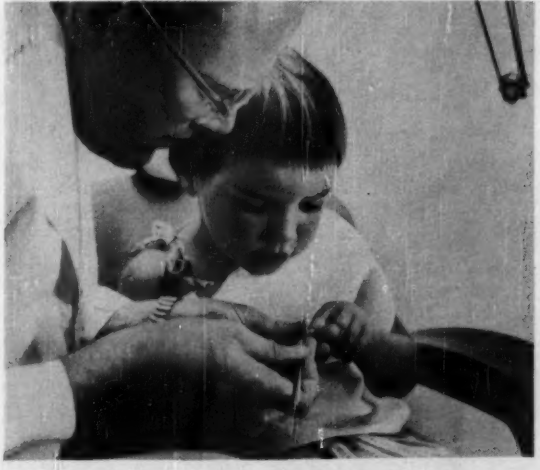


Girl meets drill for the first time and the dentist tries to make the episode an enjoyable situation. She listens to the buzzing sound, and then he polishes her thumbnail to show how the drill will clean her teeth.

In the bottom pictures Lisbeth inspects the powder the dentist will use. He tells her, "This is what we use instead of toothpaste." Acquainted with the equipment, she leans back to have her teeth cleaned.

The dentist explains that his probe is like a toothpick which helps him look for cavities in her teeth.

After he explains the probe and shows her his little mirror, he proceeds to give her fluoridation treatment.



Then the dentist shows her a plastic model so she sees how teeth actually work. Most children enjoy this display. Lisbeth's mother watches so she may be of help.

He explains to her, "Brush down on your upper teeth and up on your lower ones." Lisbeth then picks out a toothbrush of her own, and the dentist writes her name on it.

a dentist, here's how to find one. Ask your neighbors for names of dentists they like. You may also telephone or visit your local county or city dental society for a list of names of dentists in your neighborhood. Otherwise, consult the American Dental Society's Directory, which should be available in any public library.

By carefully explaining to a child just what he is going to do and how he is going to do it, a pedodontist sets the cooperative attitude necessary for the dental care a child will need throughout his life. How he does this is shown in these pictures of a young patient with Dr. Norman Olsen, chief of dental service at Children's Memorial Hospital and chairman of pedodontics at Northwestern University in Chicago. END

Mother and daughter view the x-ray pictures and are told all teeth are perfect—no work needs to be started.

Lisbeth gets an appointment to return in six months. Instead of being afraid, she looks forward to returning.

RADIATION'S OTHER FACE:

The "Bomb" That

CAN MEDICAL SCIENCE

—Save man after supposedly lethal doses of atomic radiation?

—Turn back leukemia for limited periods?

—Change the body mechanism which makes us immune to certain diseases?

—Transplant human hearts, lungs, and kidneys?

Some of these advances already have been attained and giant strides toward achievement of others have been made by investigators working with whole-body irradiation at the Mary Imogene Bassett Hospital in Cooperstown, New York.

Here is an up-to-the-minute report on these exciting developments in an interview by writer Howard Earle with Dr. E. Donnall Thomas, physician-in-chief at Bassett Hospital and co-director of research in whole-body irradiation.

Q. What is whole-body irradiation and what are you attempting to do with it?

A. It is giving intensive radiation to all parts of the human body simultaneously and uniformly. The basic purpose of our research involves the manipulation of fundamental biological processes. We deliberately destroy—at least temporarily—the bone marrow cells which make antibodies. These antibodies fight off infection and make us immune to various diseases, and they also respond automatically to reject tissues from an unrelated person. This is why skin grafts and organ transplants do not "take" permanently, except between identical twins.

Now we have learned that with whole-body irradiation we can transplant bone marrow between unrelated persons. Such marrow, given intravenously, will grow and repopulate the irradiated person's bone marrow spaces. This makes it possible for him to accept transplants of other tissue from the donor who gave the marrow.

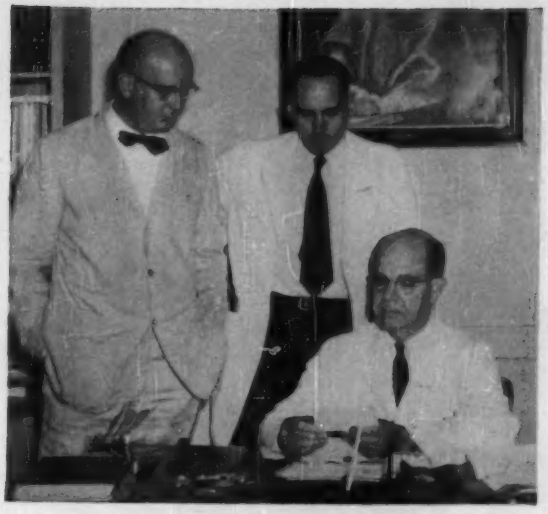
We have known for years that some forms of leukemia are extremely sensitive to x-rays, but large doses of such radiation damage the normal bone marrow. Now we think it may be possible to give large doses of irradiation and afterward return the patient's bone marrow to normal by transplanting new marrow.

Q. How does your irradiation unit work?

A. We use two cobalt-60 units, or "bombs," as they are often called. The patient lies between the two units so that his entire body is irradiated at the same time. This is a tremendous advantage over the old procedure which irradiated a single area of the body and then moved on to another area. There was no uniform irradiation such as is now possible. Our new unit has been in operation for nearly a year now and is the only one of its kind in the country.

Q. Would you describe the irradiation therapy room?

A. It is specially constructed to prevent any possible seepage of radiation to the outside. The walls are made of the densest concrete available and are nearly four feet thick. All pipes, conduits, and ducts lead into the room from underground to avoid any channels for radiation escape.



Pioneers in whole-body irradiation at Bassett Hospital are (from left) Drs. J. W. Ferrebee, E. Donnall Thomas, and James Bordley III.

Can Heal

A nurse and an x-ray technician are present continuously while the teletherapy unit is in use. They stand outside the room and observe the patient through a very thick lead glass window. The room is equipped with an intercom system, piped-in music, and a reading lamp. Radiation must be completely shut off before the patient can leave the room to eat or care for natural body functions. Very high doses of irradiation sometimes cause nausea, but this can be controlled by drugs.

Q. Is it true that you give the patient more than double the lethal dose of irradiation?

A. The lethal dose for man is not known, but it's believed to be about 500 roentgens. We give a patient between 20 and 40 roentgens per hour, or a total maximum dosage of 1200 roentgens over 30 to 35 hours.

Q. How do you maintain life after giving such huge amounts of irradiation?

A. The so-called lethal dose is lethal because it knocks out normal bone marrow function, which is to produce blood elements. After the bone marrow cells cease to function, the patient has a tendency to bleed for one to two weeks because platelets (small, colorless corpuscles in the blood which play a role in clotting) are not being produced. Because the patient is not able to make blood, he becomes anemic. And because the white cells are not there to combat bacteria, he is subject to infection.

Death usually occurs from bone marrow failure about 10 days after lethal doses of irradiation. However, by giving the patient multiple transfusions of fresh whole blood and platelets and by protecting him against bacterial infections with antibiotics, we can extend life to 30 days.

During that time we must restore the bone marrow's ability to produce white and red blood cells and platelets or the patient will die. This means transplanting marrow from a donor or from a bone marrow bank during those 30 days.

Q. Could you return to normal a person who had suffered what is now considered a lethal dose of irradiation during an atom bomb attack?

A. Yes, provided the radiation damage is confined to the bone marrow. More than 2000 roentgens of irradiation to other tissues (such as the intestinal tract) would damage them to a lethal extent. Hence bone marrow infusion is of no value in cases of massive irradiation exposure.

Treatment of radiation injuries is one of the major objectives of our studies. We are working with acute leukemia patients because we know they can be benefited by whole-body irradiation and bone marrow transplantation. However, with persons who don't have leukemia, our problem is considerably simplified. All we have to do is transplant bone marrow, whereas with a leukemia patient we must also kill off the leukemic cells.

I think we are pretty well along on this problem of transplanting bone marrow. Even if a transplant is not permanent, it will function long enough in most cases to tide a person over a dose of irradiation that would otherwise be lethal.

Q. How much marrow is used in transplants?

A. The active bone marrow cells in the body probably do not make up more than a pint in liquid measure. Only about five percent of that total (or four-fifths of an ounce, liquid) is used.

Q. How is marrow taken from a donor?

A. We use a technique called multiple aspiration. The donor is put *(Continued on page 76)*

MILK

HOW WORKING MOTHERS Solve Problems AT HOME

by Mollie Klapper Bersin, M. D.

A mother who has to go to work very soon discovers that in rearing her children she encounters problems her friends and neighbors do not face. She observes in her offspring the usual emotional reactions and behavior disturbances exhibited by the average healthy child, but in addition, various problems arise which are distinctly related to her long absences from her family, to her dual responsibilities, and to her conflicts concerning these, to her anxiety about her children, to her endless rushing, and to her very real excessive fatigue. These are problems she has to solve.

WITH OUR increased standard of living and the constantly rising living costs, more and more couples are finding that two incomes are necessary just to maintain their family above subsistence level. It makes the difference between mere living and having some of the better things of life. This is no simple project: managing a job, a home, and bringing up a family. Once a mother steps on this merry-go-round, unless she's a pretty remarkable woman, she is never free of some tension and emotional strain.

One-third of all women workers have children under 18 years of age—according to U.S. Department of Labor statistics. The number of employed mothers with children under 18 was reported to be 6.5 million in 1955, an increase of almost 1.9 million compared with 1950. Of these employed mothers, about 2.5 million had children under six years of age. Most of these were married women with husband present, but nearly 500,000 were either widowed or divorced or for other reasons the husband was not present.

The mother whose family needs her income doesn't have to decide whether she should work. She pitches in and does the best she can. The mother whose dedication to a profession is her most pressing consideration has no doubt in her mind what her decision will be. And the young college graduate who finds homemaking confining may have some moments of guilt and anguish, but will probably be a better mother if she is permitted to fulfill her compelling need for the ego satisfactions of achievement in the competitive fields of business, science, or the arts. But the mother who finds that devotion to her family gives life its only real meaning has serious problems to consider when she decides to augment the household income by going to work.

If the increase in the family income is the motivating factor, as it is with the majority of working women, the salary should be considerably more than the cost of domestic help or day care service, transportation, extra clothing, etc. It ought to be enough to really make a difference in the family's standard of living. Otherwise it isn't worth coming home tired, harassed with responsibilities, and often irritable with the ones who mean much more to you than all those persons you've had to be polite to throughout the day.

Unless the children are old enough to help, it seems unwise to work such long hours that dinner must be served unreasonably late and little ones put to sleep beyond their proper bedtime. If working means that you have no time to listen to accounts of the day's triumphs and problems, to give counsel where needed, to hold the baby in your arms or read a bedtime story, then—unless the family couldn't possibly do without your income—it's not worth the sacrifice.

If the household is to *(Continued on page 67)*

by Helen C. Hamilton,
Corn Products Co.

Salads

Want to keep January meals from being dull and unappetizing? Try a salad—the crisp taste of greens glistening with a flavorful dressing, or a tangy bean salad. Here are recipes for a family-size salad bowl, a basic French dressing with five flavor variations, and a bean salad.

SALAD BOWL

½ clove garlic
¼ teaspoon prepared mustard
1 teaspoon salt
Few grains pepper
¼ teaspoon Worcestershire sauce
1½ tablespoons vinegar
4 tablespoons salad oil
1 quart assorted salad greens

Drop garlic clove in wooden bowl. Add prepared mustard, salt, and few grains pepper. Blend thoroughly with fork. Add Worcestershire sauce, vinegar, and salad oil. Beat with fork until thoroughly mixed. Add crisp and well-drained salad greens, broken into bite-size pieces. Toss lightly until all greens glisten. Serve at once. Makes 4 servings.

BASIC FRENCH DRESSING

1 cup salad oil
½ to ¾ cup vinegar
1 to 3 tablespoons sugar
1½ teaspoons salt
½ teaspoon paprika
1 clove garlic, peeled and sliced
½ teaspoon dry mustard

Measure all ingredients into a bottle or jar. Cover tightly and shake well. Chill several hours, then remove garlic. Shake thoroughly before serving. Lemon juice may be used to replace all or part of the vinegar.

Zesty French Dressing: To the Basic French Dressing add 2 tablespoons catchup, 1 teaspoon Worcestershire sauce, and 1 tablespoon lemon juice.

Mystery French Dressing: Combine ingredients for Zesty French Dressing in a bowl. Add 1 unbeaten egg white. Beat with rotary beater until well blended. Store in refrigerator in covered container. Dressing thickens slightly on standing and keeps well. Mix thoroughly before serving.

Spicy French Dressing: Prepare spiced vinegar and use in preparation of basic recipe. To make spiced vinegar, heat and add 1 tablespoon mixed pickling spices. Tie spices in cheese cloth if desired. Let spices stand until vinegar is cool. Strain or remove bag of spices.

Florentine Dressing: To the Basic Dressing add 4 tablespoons finely chopped raw spinach and ½ teaspoon onion juice.

Cheese Dressing: To the Basic Dressing add ¼ cup crumbled Roquefort or Blue cheese.

You can vary your favorite bean salad by using red and white kidney beans, green or wax beans, or chick peas.

ANY BEAN SALAD

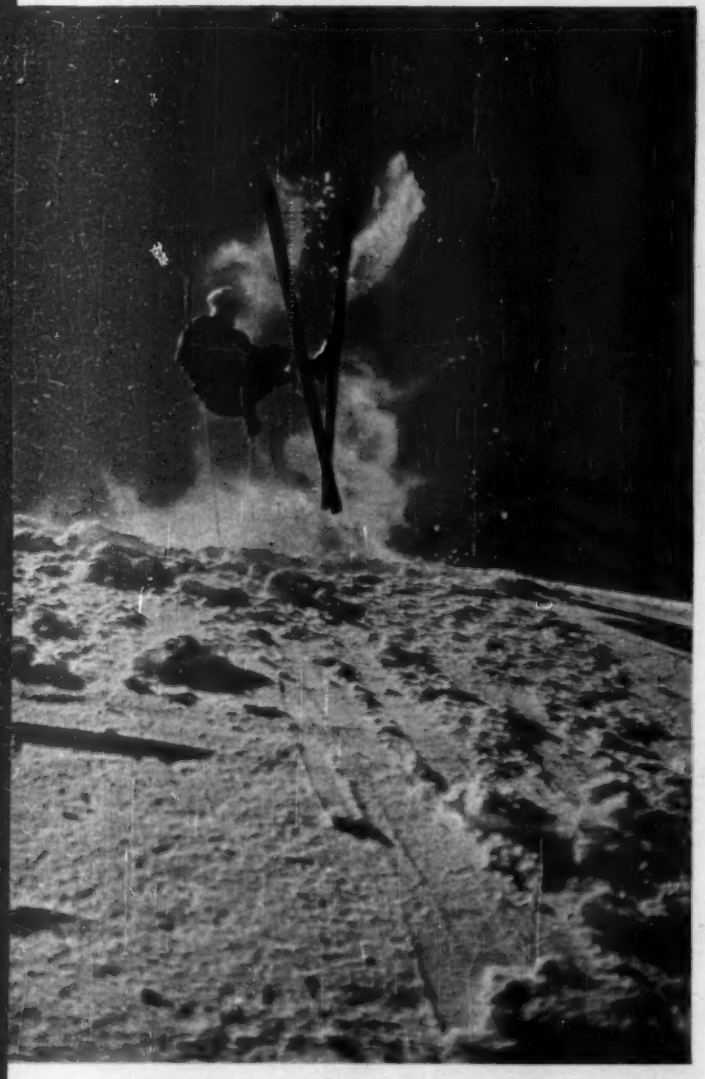
½ cup salad oil
¼ cup vinegar
liquid from beans
1 tablespoon sugar
1 teaspoon salt
¼ teaspoon pepper
1 No. 2½ can beans
2 radishes, sliced
1 tablespoon chopped scallion
1 tablespoon chopped green pepper
1 tablespoon chopped pimento

Combine salad oil, vinegar, any liquid from beans, sugar, salt, and pepper. Pour over mixed vegetables and marinate at least 3 hours in refrigerator. Serve plain or arrange on lettuce leaves if desired. Makes 4 servings or 8 appetizer-size servings. Green or wax beans, red or white kidney beans, or chick peas may be used in making this salad.

Take a Winter Sports Vacation

Mighty good fun and a lot of healthful exercise await the winter vacationers who spend their time skiing or participating in many other winter sports.

by DENNIS ORPHAN



Skiers find thrilling action on a powder-snow covered ski course or run. A small jump adds to the excitement.

IMAGINE YOURSELF skiing down some of the most exciting slopes in the world, or swimming in a heated pool surrounded by snow-capped mountains, or ice skating, or flying down a steep hill on a sled, toboggan, or "flying saucer." These and other thrills await you and your family if you take a winter sports vacation.

Whether you are a skier, or a person seeking winter sports or breath-taking scenes with snow and ice as a general theme, you'll find numerous and diversified accommodations throughout the country. If you're single you'll have a choice of expensive suites overlooking beautiful lakes or pools, or you may be billeted in dormitories or farmhouses with numerous other winter-sports-loving enthusiasts. Families may lodge in luxurious rooms in large resorts or in cozy cabins.

Once that first good snow covers the ski areas, the thoughts of many of the almost four million skiers throughout the country turn to the mountains and the exhilarating thrills of conquering new slopes. This is a sport for all age groups—the entire family may participate.

Where can you find winter fun? Just about anywhere in Northern United States and Canada, where winter resorts and public places provide accommodations to match every pocketbook. According to the National Ski Association there are some 170 ski areas in the United States and 24 in Canada which have a minimum of one lift. If you include rope tow areas we could count over 1000 ski sites.

In selecting a winter sports area, decide exactly what you want to do. If you're an expert skier, you won't want to go skiing at a place for beginners only. If you want to take your family for all around winter fun, make sure the resort caters to youngsters and that facilities are available for general winter sports. Some winter gathering places are open throughout the week, while others stay open on week ends only.

EASTERN UNITED STATES. You'll find good skiing

Expertly trained ski instructors are available to help you whether you're a novice or an advanced skier.

You'll find a variety of runs at many winter resort areas served by modern and efficient double-chair power lifts.

and other winter sports attractions at Lake Placid, New York, one of the country's most fashionable winter resorts.

Featured at Lake Placid are indoor and outdoor ice skating, bob-runs, tobogganing, and the popular Whiteface Mountain Ski Lift. Whiteface boasts the steepest ski trail east of Colorado, providing a test for the finest of skiers.

IN PENNSYLVANIA'S POCONO MOUNTAINS, winter sports enthusiasts have scores of areas to choose from. The same is true in New England where many towns have winter accommodations and ski lifts. At Stowe, Vermont, skiers will find one of the country's finest ski centers. The Belknap Mountains area near Laconia-Gilford, New Hampshire, offers a complete recreation program in winter sports for all. Nearby is beautiful Lake Winnipesaukee.

MIDDLE WEST. Skiers will find many fine areas in Michigan and Wisconsin. The Dickinson Hotel near Pine Mountain ski slope in Iron Mountain, Michigan, caters to all age groups. The hotel features ski dances, hay rides, tobogganing, skating, sleigh rides, ice skating, skiing, and other winter games. The Hotel's Steak House confidently boasts of the finest steaks in the northlands.

Other good ski lodgings may be found in Brule Mountain near Iron River, Michigan; Rib Mountain, Wausau, Wisconsin; Cliffs Ridge, overlooking Lake Superior at Marquette, Michigan, and Boyne Mountain, Michigan.

An exceptionally good winter sports area for the entire family may be found at the Dell View hotel on beautiful Lake Delton, Wisconsin. The hotel features skiing, skating, snowshoeing, sleigh riding, tobogganing, and other sports.

THE ROCKIES. Colorado's winter playgrounds feature some of the finest skiing in the country. The world's largest chair lift is located in Aspen, 200 miles west of Denver. Excellent accommodations include the Aspen Apartments, Roaring Fork Inn, and Hotel Jerome. Other splendid Colorado winter sports areas include Winter Park, Berthoud Pass, Arapahoe Basin, Loveland Basin, and Hidden Valley, all about 70 miles from Denver. Here along the Continental Divide are hotels and winter dwellings catering to various tastes and purses.

TAOS SKI VALLEY, 19 miles northeast of Taos in the Carson National Forest, New Mexico, boasts of mountains ranging from 9000 to 11,000 feet, and a group of smaller slopes. There is also a beginners' slope for children. Convenient private or dormitory lodging may be found in Hondo Lodge and Chalet Alpina. Francais St. Bernard restaurant offers fine French cuisine.

Alta, Utah, is a fast-growing favorite for all skiers throughout the country. It's in the Wasatch National Forest, 25 miles from Salt Lake City. It boasts over 50 runs for novice to expert skiers.

At the Rustler Lodge you'll find luxurious comfort in modern surroundings. The Lodge's hot *hors d'oeuvres* on a fireside table are especially welcomed after a long day on skis.

Sun Valley, Idaho, is one of America's most popular winter resort areas. It's an ideal place for the entire family to spend a winter holiday since its sports program caters to all age groups. There is skiing, sleigh riding, ice skating, tobogganing, and other winter fun. Some Sun Valley lodges feature outdoor heated swimming pools for adults and wading pools for youngsters. Accommodations may be had at the Sun Valley Lodge, Challenger Inn, and the Chalet Dormitories.

Jackson Hole, Wyoming, is another excellent winter sports area. Snow King Mountain, a few blocks from the center of town, and Teton Pass, make this resort a skier's must. Jackson Hole Lodge, situated near a double chair lift, with an unexcelled view of all ski runs, offers skiers good accommodations, excellent food, and atmosphere. Besides the double chair lift, there are four rope tows, including a "bunny tow" for children.

SQUAW VALLEY, CALIFORNIA, scene of the 1960 Winter Olympics scheduled to start in February, is rapidly becoming popular with skiers throughout the country. Mountainside restaurants serve delicious meals, and ski hotels and lodges with outdoor heated pools are featured.

There is excellent skiing, sleigh riding, ice skating, tobogganing, and winter sports for everyone on an organized or an independent basis. In Norden, California, 41 miles west of Reno, sports-lovers can ski in The Sugar Bowl, located in the High Sierra Nevada, one of the West Coast's oldest ski resorts. Mt. Disney and Mt. Lincoln offer runs to attract all skiers from experts to beginners.

Timberline Lodge in Oregon offers all of the features of a winter resort. The resort area is located in the Mt. Hood National Forest about 60 miles from Portland.

There is also a lot of winter fun to be had at Canadian inns in Jasper, Banff, Lake Louise, and other sports areas in the Canadian Rockies and Laurentian Mountains.

Your best bet is to pick a general area where you would like to do your skiing and then write to railroads, airlines, and chambers of commerce for full particulars on skiing facilities there.

Besides the hotels, there are many state and municipal ski areas that are moderately priced. Farmhouse rooms in some areas can be had for as little as two dollars per day. At large winter resorts prices start from five to nine dollars per day. National Parks with some of the most spectacular skiing arenas are well *(Continued on page 81)*

In the early morning, ski groups assemble for instruction. Many winter resorts provide free or low-cost lessons.

You don't have to be a hardy athlete to enjoy winter fun. Try your hand at tobogganing, curling, ice skating, or other outdoors snow-sports. You'll find a lot of fun and relaxation if you take a horse-drawn sleigh ride.

"After ski" fun lovers are free to take a dip in one of the two glass-enclosed pools in scenic Sun Valley, Idaho.

Safety on Skis

by Raymond Schuessler

Even though the risk of skiing injury has been reduced by safer slopes, better instructions, and improved equipment, skiers have to get and stay in condition to ward off injuries.

THE rugged Scandinavians who 6000 years ago first skied by using the bones of animals were in excellent condition," explained my doctor as he set my broken ankle, "and they knew all the pitfalls of snow and ice and didn't risk their necks for a thrill.

"The typical modern skier spends most of the year softening up at home, but with the first snowfall rushes out to conquer every slope this side of Everest."

True, I grimaced. Today, four million skiers have turned this simple Arctic act of locomotion into a sport, and the only bones associated with the game are (fractured) human bones.

But the danger of fractures or other injuries in skiing is overrated, and even the danger that does exist can be greatly lessened by better understanding of the nature and causes of these injuries.

Actually, skiing is far less dangerous than body-contact sports such as football or boxing. The total number of ski injuries (five injuries per 1000 full ski-day exposures) has risen sharply but not in proportion to the rise in the number of skiers in this fast growing sport.

Most of the injuries could be avoided by reasonable prudence. "After all," my doctor said, "people in their 40's and 50's have taken up the sport for the first time and are still enjoying it at 60 and over."

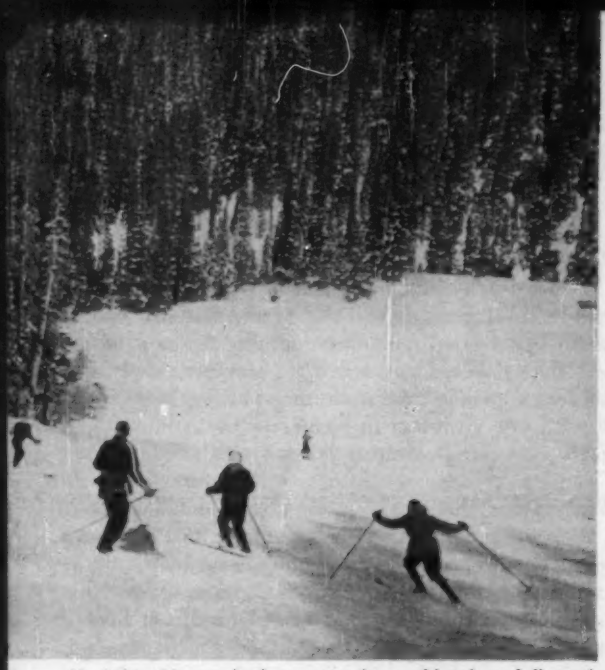
In short, skiing accidents are caused by lack of physical condition, lack of training, negligence, and plain recklessness.

The National Ski Patrol recently found that 0.5 percent of the injuries resulted from poor visibility on the hill; 7.9 from poor ski equipment; 3.6 from one skier colliding with another; 4.4 from collision with a tree, rock, or bare spot; and 70.11 were reported as being simply out of control. The remainder were caused on the tow (7.25), poor hill maintenance (3.0), and competition (1.36).

About 80 percent of all injuries are simple fractures of the limbs. The most common injury is of the ankle—40 percent, equally divided between sprains and fractures. The foot itself is so well protected by the ski boot with its rigid sole and firm binding that injuries to it are rare.

The ankle, on the other hand, is hard to support. The fracture of the lower end of the fibula (bone that attaches to the ankle) is so common among beginners that it has become known as the "ski fracture." It is apt to occur while learning the "snowplow" and the "stem turn" in which the skier falls after forcibly turning his feet inward.

Fracture of the leg occurs more often among experienced skiers moving at high speed who may



Upright skis mark the spot where skier has fallen. A companion quickly sets off to inform the ski patrol.

Patrolmen arrive with rescue toboggan. It is equipped with blankets, cardboard splints, first aid supplies.

Victim is treated for shock and injuries. Patrolmen are expert skiers trained in first aid by the Red Cross.

Next stop: first aid station at foot of hill. If necessary, victim will then be moved to nearest hospital.

hit a "sitzmark"—a bare spot or hole which was probably caused by a fall of another skier who neglected to fill the mark of his fall with snow.

Every year, as ski runs become more popular and more heavily traveled, they grow more bumpy. If the tip of the ski is driven into a "mogul" (bump), the skier is thrown forward over his toes. Injuries caused by this type of fall include forward dislocation of the ankle, fracture of shin bones, and rupture of the heel tendon. According to doctors, there has been an increase of this type injury during the past five years.

The knee is involved in about 25 percent of ski injuries. Usually these are ligament tears.

The "ski pole fracture" is a fracture of the bones in the hand which results if the skier, pole in hand, falls on a hard surface. If the strap of the pole is twisted around the thumb, dislocation of the joint may occur.

What advice on prevention of ski injuries do physicians give?

1. Most important, one should condition himself adequately before a ski vacation. If one is not athletically active he should begin about six months before the start of the season with sit-ups, deep knee bends, push-ups, toe raises on a book, and participation in such sports as hiking, bowling, and handball. Even walking and stair climbing are of value. Running on your toes is excellent. Professional skiers strengthen their ankles by placing a book on the floor, standing on their toes on top of the book, and raising up and down on their toes. If you ski only on week ends you should keep on exercising during the week.

Remember, poor physical *(Continued on page 84)*

What You Should Know About–

DIABETES

by BERNARD SEEMAN

Diabetes mellitus, commonly called diabetes, is one of the most prevalent chronic afflictions of mankind. According to Quentin R. Remein of the U.S. Public Health Service, there are probably 2,900,000 diabetics in the United States, considerably more than previously estimated. Of these, almost half are undetected.

The fact that so many cases await discovery and medical care poses special problems for the community, family, and individual. Untreated diabetes can have very serious consequences. But with medical care, the diabetic can often live almost as normally as the nondiabetic.

Since the incidence of diabetes seems to increase with the growing life expectancy of the general population, it becomes increasingly important for each of us to know all we can about an ailment which may, some day, touch close to us.

What is diabetes?

Diabetes is a chronic ailment in which the body loses the ability to convert sugars and starches into the energy needed for normal activity. Doctors believe that diabetes may actually result from several different ailments–perhaps as many as four or five–all with one symptom in common: the inability to metabolize carbohydrates.

What causes diabetes?

We do not know the fundamental cause of diabetes. We do know that it is not caused by germs, bacteria, or other microbes. We also know that to metabolize carbohydrates we need insulin, a hormone produced by the pancreas. If the pancreas does not produce any insulin or if it produces too little; or if it produces enough insulin but fails to release needed amounts into the blood; or if other chemicals in the body destroy or interfere with the insulin that is released, then the symptoms of diabetes develop.

Can diabetes be inherited?

Yes. Where both parents are diabetic, all children may become diabetic. If one parent is diabetic and the other has a family history of diabetes, there is a 50 percent chance of the children becoming diabetic. If neither parent is diabetic but both have diabetes in the family, the children have a 25 percent chance of getting diabetes. If one parent is normal and has no family history of diabetes, the children should not get the disease.

Is overweight a factor?

Yes. Not all obese people become diabetic, but more than eight out of every 10 adult diabetics were overweight before the disease developed.

Who gets diabetes?

Practically anybody, from children to the very old. Susceptibility increases with age. Men reach their greatest susceptibility at 51, women at 55. Unmarried men are more likely to be diabetic than married men, married women more likely than unmarried women, a mother more likely than a nonmother, and the mother of a large infant more likely than the mother of a small one. Statistically, the most likely candidate for diabetes is the woman between 45 and 70, with a family history of diabetes, who is overweight, and has had numerous big babies.

What is juvenile diabetes?

Juvenile diabetes is a severe form of the ailment

in which there is an absolute deficiency of insulin. In the majority of cases, it develops in childhood, adolescence, or young adulthood. The juvenile diabetic will remain so for the rest of his life and will probably always need insulin injections.

How can diabetes be detected in the absence of obvious symptoms?

A number of very sensitive tests are available to the physician. Apart from the ordinary urine and blood tests for abnormal sugar levels—which may not be positive in mild cases—there are such refined tests as the glucose tolerance test and the recently-devised intravenous tolbutamide response test. The glucose tolerance test determines the body's ability to deal with an overload of sugar and takes two to three hours. The tolbutamide response test, as shown by Drs. R. H. Unger and L. L. Madison of Southwestern Medical School, Dallas, is sensitive, reproducible, and takes only half an hour.

Is diabetes fatal?

Before insulin was isolated in 1922, diabetes was almost invariably fatal. Today, with proper medical care, the well-controlled diabetic should be able to live out a virtually normal lifetime.

Does diabetes ever go away?

In some cases the symptoms seem to vanish. This is known as a remission. Permanent remissions are very rare. Some cases of mild diabetes, even a few cases of flagrant diabetes, have responded to mild dietary treatment with a total disappearance of symptoms. Remissions also may take place in juvenile diabetes after insulin therapy is begun, but the disease invariably returns.

Will avoidance of sugar and starch prevent diabetes?

Definitely not. Dr. R. R. Haist of the University of Toronto, and others, recently showed that there must be sufficient carbohydrate in the diet if normal insulin production and release are to be maintained. Carbohydrate deprivation, he found, seems to impede the insulin-producing mechanism and this may provoke diabetes.

What is the aim of diabetes treatment?

Modern treatment seeks to control the ailment so the diabetic feels well and avoids both the symptoms and complications of the disease. It provides a well-balanced diet that will maintain normal weight and supply the nutritional requirements for growth, work, play, and the regular activities of daily living. Finally, treatment should be simplified to the point where it makes the minimum intrusion into the diabetic's normal life. With intelligent cooperation on the part of the patient, the physician usually has a good chance of attaining this goal.

How is diabetes treated?

Modern treatment is a carefully established balance of diet, physical activity, and, where needed, medication—either insulin injections, oral therapy, or a combination of both. If this balance should be disturbed—if the patient overeats or undereats, engages in too much or not enough physical activity, if he skips medication or takes the wrong dose—the complications of diabetes are likely to ensue unless the balance is quickly restored.

What is the function of controlled diet?

Some dietary regulation is important in every case of diabetes. In many mild cases, especially among the elderly, diet is often enough to control the ailment. Where the patient is overweight, diet is used to bring the weight to normal and then keep it there.

Since diet must be balanced with physical activity, and, where necessary, medication, it takes into account the patient's age and normal activities. A coal miner needs more food than an office worker, a mother with active youngsters needs more than a woman with servants, and a growing child needs more than an elderly person.

The diet prescribed by the physician provides all the foods essential for health and normal activity. Except for concentrated sugars, these are usually the same foods—in controlled portions—as those eaten by the rest of the family.

What is the function of the insulin injection?

Insulin injections serve to replace the natural insulin activity which the diabetic lacks. They are essential where there is an absolute deficiency of natural insulin. They are often necessary where the diabetes is unstable and difficult to control. They may become necessary to the non-insulin-taking diabetic should illness or severe stress increase the intensity of the disease.

The exact way in which insulin works in the body is not known, but we do know that it helps convert carbohydrates into energy. Type of insulin, dosage, and timing of the injections are prescribed by the physician who may, at times, suggest variations to keep the total treatment in balance.

Why is controlled physical activity important?

Since diet and medication *(Continued on page 62)*

Electronic Watchdogs Guard Ailing Hearts

by WILLIAM R. VATH

Three Lions

IN CHICAGO, a housewife is literally brought back to life by a machine that fires bursts of electricity into her body after her heart stopped 20 times in two days.

In a California hospital, a nurse flips a switch at her station and on a radar-like screen views the heart action of three cardiac patients scattered throughout a large ward.

In St. Paul, a 72-year-old man walks around with a fine, braided wire leading from his heart to a white plastic box the size of a pack of king-size cigarettes. Inside the box, mercury batteries send tiny electrical currents to regulate the man's heartbeat.

These are a few of the thousands of Americans who owe their lives to electronic devices which are helping ailing hearts. Teams of physicians and engineers have applied modern principles to an observation made nearly 200 years ago by an Italian anatomy lecturer. In 1771, Luigi Galvani noted twitching in the legs of a freshly dissected frog and established that muscle responds to stimulation by electricity. Later investigators proved that nerves generate electric currents and that the nerve impulses which make muscles contract are electrical.

The heart is a muscle and the heart impulse is electrical. From a tiny, barely visible knot of tissue within the heart called the sino-atrial node, the impulse goes to the heart muscles, causing the chambers to contract in proper sequence and pump blood.

If something interferes with the normal rhythm of the heart, death can follow rapidly. Cardiac arrest—sudden stoppage of the heart—may occur during any operation with any type of anesthetic. Or it may follow coronary occlusion (a blood clot in one of the heart's arteries), drug intoxication, or a seizure due to Stokes-Adams disease (an ailment which causes blackouts, convulsions, and coma).

The ventricles—the main pumping chambers of the heart—may simply stop contracting (ventricular standstill), or they may quiver ineffectually because of a disordered spread of the heart impulse through the ventricles (ventricular fibrillation). Unless it is halted swiftly, this condition is fatal, for a fibrillating heart pumps no blood.

Not until chest surgery was developed were doctors able to see just what

Catheterization, a dramatic new aid in heart diagnosis, uses electronic equipment. By taking pressures and blood samples from inside the heart, a team of four doctors and two technicians can pinpoint source of trouble.

UPI

At National Bureau of Standards, magnetic tape records heartbeat data and a digital computer analyzes and compares these records to help diagnose cardiac disease.

Experimental device picks up and transmits heart impulses, body and skin temperature, pulse rate, and respiratory volume to help assess Navy job requirements.

Naval Medical Research Institute

"Electronic medicine benefits all in better health

was happening when cardiac arrest occurred. If the heart stopped beating, surgeons could attempt to restart it by massaging it manually, by injecting drugs, or by using an artificial pacemaker—a device that fires timed bursts of electricity into the organ. If a patient's heart began fibrillating, they could stop these disorganized contractions with an electric defibrillator, which delivers powerful shocks through metal paddles held directly against the heart.

But not all cardiac arrests occur in the operating room. And a surgeon is not always immediately available to open the chest. What was needed was a way to stimulate the heart without opening the chest. In 1952, Dr. Paul M. Zoll, a cardiologist at Boston's Beth Israel Hospital, developed a way to arouse the heart from a standstill by applying electric currents through the skin over the heart. Since that time he has used the external pacemaker on more than 200 patients with Stokes-Adams disease and other types of cardiac arrest, and it has been widely used with success throughout the world. This is the machine that brought the Chicago housewife back to life.

At the University of Minnesota, surgeon C. Walton Lillehei tried using the external pacemaker to solve a special problem in some cases of open-heart surgery. Even though the operation may have been a success, heart block was a danger for 10 to 25 percent of his patients. The pacemaker could help the heart settle down to a steady, normal rhythm. But the machine would be needed for days, or even weeks, and the relatively high voltages (about 60 volts) made patients jump and twitch with pain.

Doctor Lillehei solved this problem by attaching an electrode directly to the heart at the time of the operation. Leading the wire out through the chest incision, he placed a second electrode just under the skin. Now the heart could be effectively stimulated with 1.5 to 2.5 volts—about the same voltage supplied by a flashlight battery. This current is so weak it can't be felt. He kept the pacemaker working until the danger was past, then withdrew the wire—as easily as taking out a drainage tube.

Later, with the help of an electronics engineer, Doctor Lillehei designed a transistorized pacemaker that worked on batteries, weighed less than a pound, and was small enough to be carried in a pocket. This is the white plastic box that keeps the St. Paul citizen alive.

This portable unit, which went into production in May 1958, eliminated two problems associated with earlier pacemakers: (1) Though nearly 70 percent of America's hospitals have auxiliary generating apparatus, power failure is always a danger with equipment that doesn't have its own batteries; (2)

This unit provides fluoroscopic view of heart, transmits its image via closed circuit TV, and takes x-ray movies.

care at lower cost"

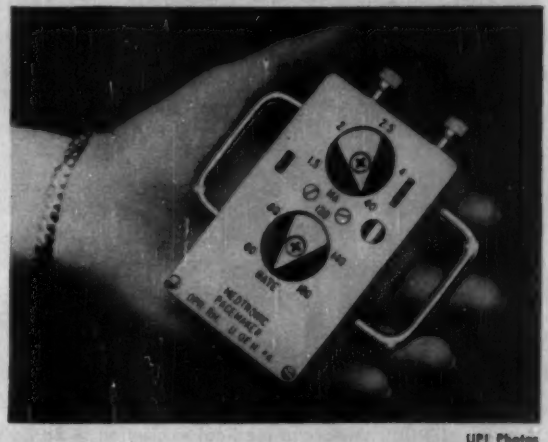
with a machine that depends on current from a wall outlet, there is difficulty in moving a patient from place to place.

At the Philadelphia General Hospital, another physician-engineer team recently came up with a miniature unit that not only contains a pacemaker but a meter showing the heart's electrical activity. They were Dr. Samuel Bellet, chief of cardiology at the hospital, and David Kilpatrick, electronics engineer for Atronics Products, Inc.

In the meantime, however, another problem bothered Doctor Lillehei. In an occasional patient, heart block developed or recurred after the electrode which had been left in the heart at the time of surgery had been withdrawn. There must be an alternative, he thought, to reopening the chest, or using the painful external pacemaker.

This problem was licked when a surgical resident on Lillehei's team—a Frenchman named Andre Thevenet—came up with a way to insert a wire without open-chest surgery. A long, hollow needle is inserted between the ribs and into the heart muscle. A fine wire is passed through the needle and into the heart. When the needle is withdrawn, the wire remains imbedded. *(Continued on page 77)*

Another aid to diagnosis is the image amplifier, which allows physicians to view fluoroscopes in lighted room.



Portable electronic pacemaker (right) keeps Warren G. Mauston's heart beating in correct rhythm, correcting an otherwise fatal condition known as "heart block."

UPI Photos

Among 483,000 visitors to medical exhibition in Berlin were Wolfgang and Anna Schultz and daughter Monika, 10.

"Medicine U.S.A."—

Warm Spot in the Cold War

by Stephen Donohue

LAST MONTH, the people of Dusseldorf—a sprawling industrial city in West Germany—learned how Americans receive their medical care. They saw:

- A fully-equipped operating room, a replica of those found in most hospitals in the United States.
- A typical American dentist's office.
- The newest instruments for combating cancer by use of atomic radiation.
- A two-bed hospital room, a heart-lung machine, a demonstration of rehabilitation techniques, a vast display of pharmaceutical products—obtainable in any U.S. drug store.

It was all part of a continuing program by the U.S. Information Service to show the German people "the American way of life." Through a traveling exhibit called "Medicine U.S.A.," State Department officials are demonstrating the quality and quantity of medical care available to Americans.

Premiere showing of Medicine U.S.A. took place in September at Berlin's gigantic Industrial Fair, an annual exhibition which combines the elements of state fairs and trade shows held throughout our country.

At each of the Berlin Fairs in the past 10 years, the United States has tried to show the advantages

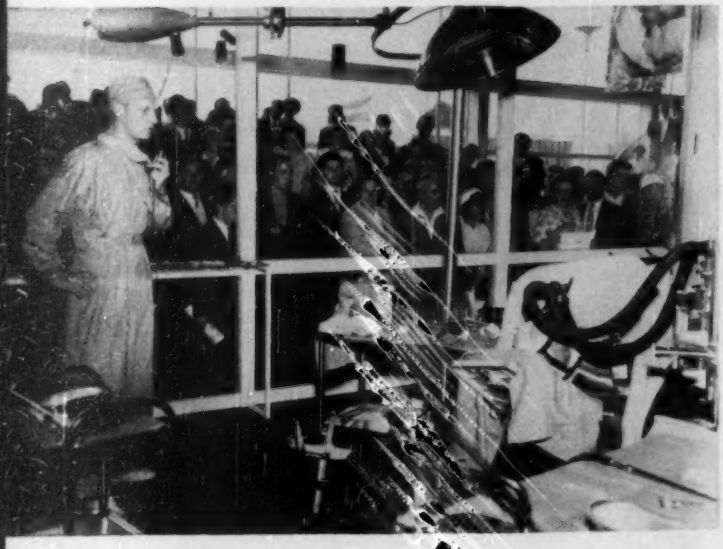
Monika presses her nose against the glass for a closer look at the anesthesia apparatus in one of the displays.

One exhibit showed how medical service is pravided in U.S. Some 1200 doctors, dentists attended the Fair.

Schultz family views model of modern hospital to be built in Berlin with joint funds from U.S. and Germany.

The graphic realism of one display—a huge photo of scarred accident victim—makes Monika squirm a little.

This fully-equipped operating room, a replica of those found in most U.S. hospitals, drew large crowds daily.



of living in a democracy. In 1958, the U.S. Information Service built its exhibit around a typical American town—Kalamazoo, Michigan.

The 1959 American exhibition was housed in a modernistic pavilion called Marshall House overlooking a tree-lined garden. During the 14-day show nearly 500,000 people streamed through exhibit areas spread over two floors and overflowing into a broad plaza in front of the hall. Outdoors, a U.S. Army helicopter showed aerial rescue operations and Boy Scouts from American families in Berlin demonstrated first aid techniques.

Designed by Peter G. Harnden, who also planned the United States exhibition at the Brussels World Fair, Medicine U.S.A. was organized and outfitted with the cooperation of government medical agencies, industry, the American Medical Association, labor groups, and various other organizations in the United States.

More than $350,000 worth of equipment, loaned

New pharmaceutical products impressed many visitors, one-third of whom came from East Berlin and East Germany.

by manufacturers, was shipped to Germany and set up in Marshall House especially for the exposition.

And the Germans were fascinated by what they saw.

Confusion developed at first because some Berliners thought Medicine U.S.A. was a treatment center set up to take care of sick Germans.

A special assistant for the Information Service said the fair was only two hours old when two women appeared from the Eastern Zone. Both suffered from psittacosis and were looking for an American wonder drug to cure the disease.

From the first day, however, Marshall House was the hit of the Industrial Fair. More than 70 percent of those who entered the spacious exposition grounds visited Medicine U.S.A.

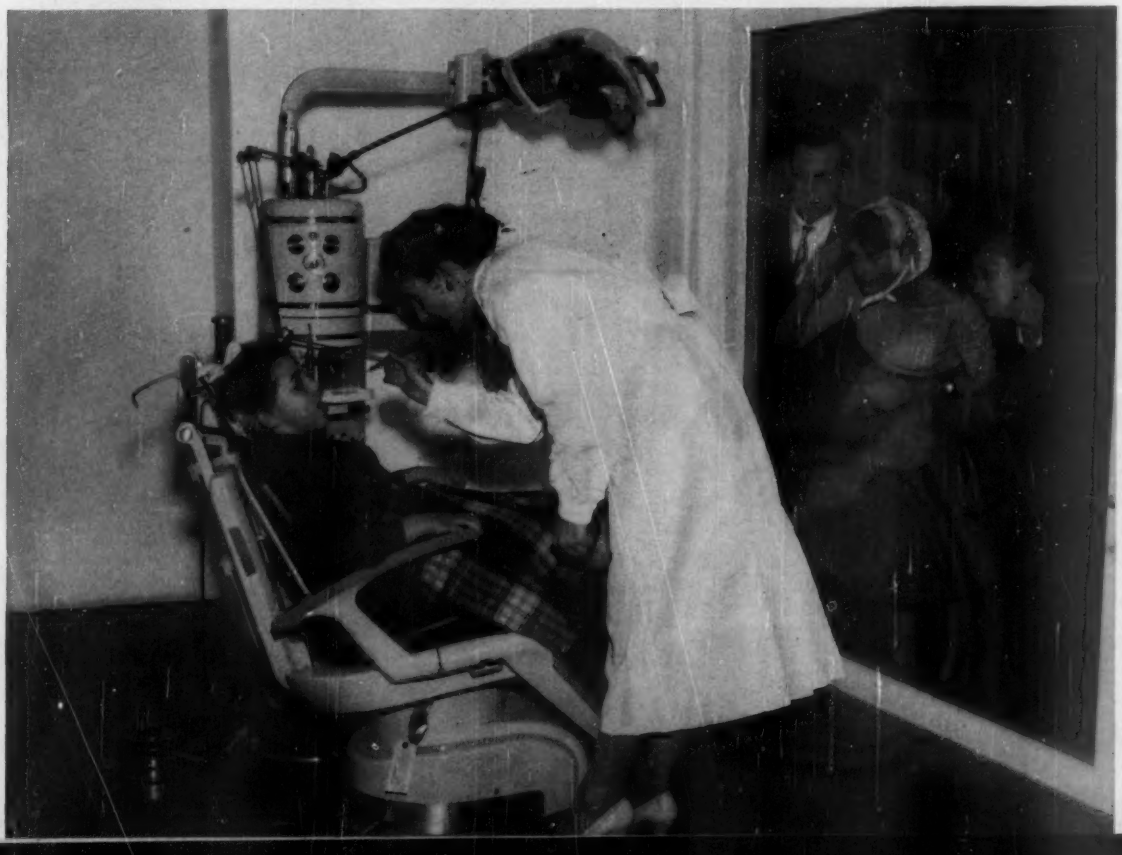
Entering from the garden terrace, visitors saw an attractive hall sparkling with color and geometric forms suspended from the ceilings.

In the middle of the main exhibit area was a glass-

American drugs are highlighted in this intricate display by Peter G. Harnden, one of world's top show designers.

Rehabilitation worker (himself a double amputee) demonstrates retraining methods used for helping the handicapped.

Her parents watch with intense interest as Monika has her teeth checked in model of typical U.S. dental office.



walled room where children pressed their noses to the windows to see demonstrations of an automatic heart stimulator.

Two staircases wound up to second-floor levels where sections were devoted to pharmaceuticals and displays which explained how medical service is provided in the United States.

So extensive was the exhibit that visitors and even local newspapers debated about which was the most interesting part of the show.

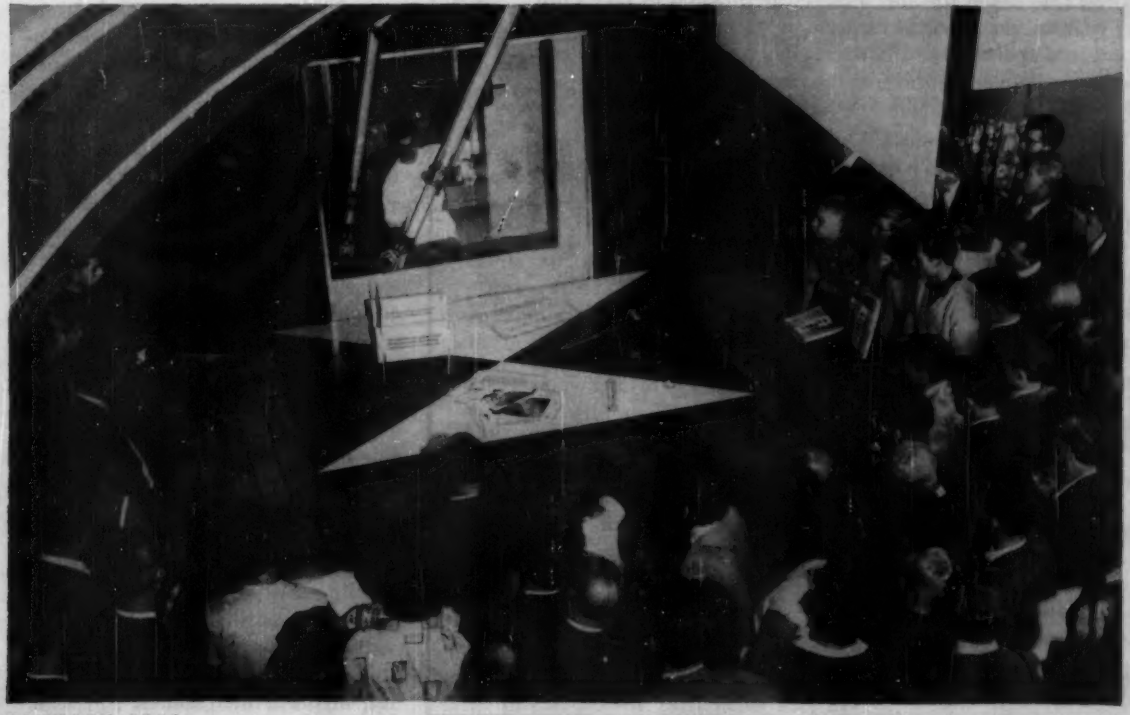
Said Berlin's *Der Morgenpost:* "There are so many overwhelming machines and individual items shown that one does not know what to praise first." Another Berlin newspaper, *Der Abend*, said "how the sick and healthy are treated in the U.S.A. is clearly shown as an example of outstanding medical progress in America."

Among the tow-headed children who followed their parents wide-eyed through the exhibit, there was little question about what was best. They were most fascinated by a demonstration of an electronically-controlled set of "magic hands" used in the safe handling of radioactive materials in atomic research.

Although planned primarily for the general public, Medicine U.S.A. soon became a source of information to physicians and dentists in Berlin. Some 1200 professional men visited Marshall House during the exposition. *(Continued on page 82)*

"So overwhelming one does not know what to praise first" was Berlin paper's comment on Medicine, U.S.A.

Popular display was this set of remote-control "magic hands" used for the safe handling of radioactive materials.



LIVING LEGENDS

A series of little known human interest stories about the world's best known people.

by ANDREW ROBIN

THOUGH the three brothers were quite different in their interests, they were very close. Jon was the eldest and to him there was no question that Herman, who loved animals and kept a houseful of dogs, guinea pigs, and fish, would one day be a veterinarian. Jon also knew that the youngest, Lee, a bright, quick student would make a fine psychologist or psychiatrist.

Only Jon was at odds as to his future. At 19, he had just graduated from the City College of New York and was undecided about his career.

His father, a manufacturer of women's wear, suggested that someone who spoke and debated as well as his oldest son should become a lawyer.

The law appealed to him—but not enough. He had a strong urge to probe the unknown as a research scientist in order to help his fellow man. At a family dinner one night the young man announced to his surprised family, "I've been accepted at New York University Medical School."

Jon had the determination of a bulldog and would wrestle a problem until he beat it. This quickly became evident at medical school. After he completed his first year he asked for and received permission to take off a year to do special research in protein chemistry. He would spend 16 to 18 hours a day on a research project. Often he worked through the night.

After graduation he devoted himself to full-time research as a virologist. While still in his early thirties, he was asked to head a department at an Eastern university. When he arrived he found he had no lab and no staff assigned to him.

Arrangements were made to create a workroom for him in the basement of the almost deserted municipal hospital. All the young doctor had now was his quick mind, a wife and two sons, a well of energy that would never dry up, and the tenacity to see a task through.

One day a major problem was dumped in his lap when he was asked to find a preventive for a terrifying disease that had ravaged man since the beginning of civilization.

Jon tackled the problem with his small staff. He tested solution after solution. One day he held a beaker of cherry red liquid in his hand and announced to his staff, "This is it." In his hand was the answer destined to save thousands of lives and keep countless millions from insufferable pain.

Who is this medical prober? *(See page 88)*

What You Should Know About Diabetes

(Continued from page 51)

are balanced to provide diabetics with the energy needed for a certain amount of physical activity, this activity must be controlled. A steelworker who does heavy labor all week but watches television over the week end may find that the lack of activity has filled his blood with unused sugar and brought on the symptoms of diabetes. An accountant who digs in the garden over the week end may find the unusual activity has used more than the usual amount of sugar in his diet, bringing on the possibility of an insulin reaction accompanied by extreme weakness. For these reasons, physical activity must be kept within the balance of treatment.

What is the purpose of urine testing?

Tests for urinary sugar show the status of the diabetes and how well it is being controlled. So do the less frequently needed tests for acetone. The results of these tests indicate to the doctor whether adjustments in treatment are necessary.

What is the function of hygiene?

Good hygiene is important to everyone and especially to the diabetic. This is because diabetes tends to impair the circulation and any wounds or infections, especially in the feet and legs, become increasingly dangerous and may result in gangrene.

What are the new oral drugs?

Ever since Doctors Banting and Best produced insulin in 1922, doctors have searched for a form of insulin that could be taken by mouth. The search was unsuccessful because insulin, a protein, is destroyed by digestive juices. Recently several oral drugs have come into use as the result of some major scientific breakthroughs. These are not a form of insulin, nor do they replace natural insulin. But in a large number of cases they can help control diabetes without daily insulin injections.

Three such drugs are presently in use in the United States:

Tolbutamide (Orinase), the first of these, came into general use in June 1957. This drug is a sulfonylurea, a distant chemical cousin of the sulfa drugs.

Chlorpropamide (Diabinese) is also a sulfonylurea.

Phenformin (DBI) is chemically a member of the biguanide family and in no way related to the sulfonylureas.

Where are the oral drugs useful?

The sulfonylureas seem effective in about 65 percent to 80 percent of adult stable diabetes and can replace insulin injections in a great many cases where insulin has been needed. These drugs are effective in four out of five cases where the patient was over 40 at onset of diabetes, in one out of three cases where the patient was between 20 and 40. In the juvenile type of diabetes, oral drugs by themselves are rarely effective.

For either of the sulfonylureas to work, some insulin activity must be present in the diabetic. Phenformin, according to the most recent studies, also requires some insulin activity to be present.

What are the advantages of the oral drugs?

Convenience and simplicity are the most obvious advantages. By freeing a number of diabetics from the need for daily injections, they make possible a far more normal life.

The medical advantages of these drugs were outlined recently by Dr. Robert F. Bradley of The Joslin Clinic, Boston. According to his studies:

The oral drugs produce a regulation of carbohydrate metabolism in the fully-responsive diabetic that is equal to or better than that obtained by insulin or diet. There is control of diabetes often smoother than with insulin, and accompanied by a sense of well-being, lessened hunger, and a greater incentive to diet adherence. There is an attainment of tight control, with far less risk of serious insulin reactions.

What is the new combined insulin-oral therapy?

In many cases, where the diabetic does not respond to oral therapy alone and where the response to insulin is variable, a combination of insulin and an oral drug often provides a greater uniformity and ease of control.

Dr. Maximilian Fabrykant of New York University has reported that the use of tolbutamide in combination with insulin provides benefits that cannot be obtained with insulin alone.

A possible reason for this was advanced by Drs. Sidney S. Lazarus and Bruno W. Volk of the Jewish Chronic Disease Hospital, Brooklyn. Their studies indicated that injected insulin tends to suppress the secretion of natural insulin where it exists in the pancreas. But when the injected insulin is accompanied by tolbutamide, the oral agent helps maintain the production and release of natural insulin. This apparently allows for smoother and better metabolic control of the diabetes than when insulin is given alone.

What might make changes in treatment necessary?

Many things. An infection, injury, or accident, some great worry or sorrow—any of these might change the disease to a more severe form. Even a common cold may necessitate a change in treatment. A change of work or physical activity may require a change in diet or medication. Even the normal aging process is a factor for change.

What are the complications diabetics may encounter?

The two most immediate complications are diabetic coma (hyperglycemia) and insulin reaction (hypoglycemia). Other complications, some of which may be a part of the disease itself, include eye trouble, various circulatory disorders such as arteriosclerosis; and, in elderly diabetics, possible gangrene, kidney and bladder ailments, and fungus infections.

What is diabetic coma?

Diabetic coma is the result of uncontrolled diabetes. It arises from insufficient insulin activity which leads to too much sugar in the blood. Unable to use sugars for energy, the body uses up the fat and protein tissue. In the process, fatty acids ac-

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cumulate and begin to poison the system. This, if unchecked, may lead to coma and death.

This complication develops gradually and the symptoms are those of diabetes itself. Skin is flushed and dry, there is a fruity breath caused by acetone and the patient becomes drowsy. Then breathing becomes deep and labored, there is vomiting and the diabetic loses consciousness.

Coma can result from a number of things—missing medication, or too small a dose relative to food intake or physical activity, illness, or stress. There might even be a change in the nature of the disease. In any case, immediate medical attention is required.

What is insulin reaction?

Insulin reaction occurs when there is too much insulin and not enough sugar in the blood. It arises when a diabetic takes an overdose of insulin or an oral drug, if he misses a meal or eats too little, if he engages in too much activity.

Symptoms usually begin with mild hunger, then comes sweating, dizziness, palpitation, and pale skin. If the reaction is not treated, these symptoms follow: shallow breathing, trembling, blurred vision, mental confusion, and unconsciousness.

Insulin reaction can be corrected within minutes by swallowing some form of concentrated sugar—candy, honey, jam, soda pop, or fruit juice. If reaction is not treated promptly, recovery becomes more difficult.

Should diabetics marry?

Diabetes should create no problems of consequence as far as getting and staying married are concerned. The diabetic is every bit as good a marriage partner as the non-diabetic.

Can diabetics have children?

Yes. Diabetes, in itself, is usually no block to parenthood. Still, it is always wise for the diabetic planning to have a child to discuss it with the physician.

Will diabetes interfere with work?

Diabetics whose ailment is well controlled with diet or oral therapy should be able to do any work for which they are qualified. The diabetic who needs insulin injections

may find certain jobs closed to him. He will not be allowed to drive public vehicles, pilot a ship or plane, be a policeman or fireman, or do any work in which his safety and that of others may depend directly on him. This is because of the hazard of possible insulin reaction. The U.S. Civil Service Commission recently stated that "persons with controlled diabetes may be good employees and that it is good business to hire them."

Can diabetics get life insurance?

Most insurance companies issue special life insurance to diabetics and may soon improve the coverage they offer.

Will diabetes change one's way of life?

Only to the extent necessary to control the disease. The diabetic should be able to do everything he did before the ailment struck, but he will also have to observe the rules of treatment prescribed by the physician.

Does diabetes pose special problems for women?

Yes. Apart from the fact that women are more susceptible than men, it also poses other special problems. This is true for physiological reasons as well as for reasons arising from the irregular life patterns imposed by homemaking. The menstrual period and pregnancy create problems unique to women. So do the dynamic stresses of the menopause. At this time of life a woman has a greater tendency toward obesity than a man and must be more careful watching calories.

Insulin atrophy, which causes pitting of the flesh at the sites of insulin injections is rare in adult men but not uncommon among women. Fungus infections are more common among diabetic women. Middle-aged diabetic women are more susceptible than men to bladder, kidney, and other urinary infections. Diabetes also seems to increase a woman's vulnerability to heart ailments.

What problems does homemaking pose for diabetic women?

The average man has a fairly regular life, getting up, going to work, eating, and coming home all at approximately the same times and doing about the same amount of physical work each day—all very helpful in the control of diabetes. This is not true of the average woman. Homemaking almost invariably imposes an irregular life which complicates the treatment of diabetes.

Household emergencies are always arising. A child gets into a fight, is hurt, or falls ill. The mother may thus have to delay a needed meal, engage in unscheduled activity. Unexpected guests might show up, making emergency shopping and cooking necessary. An unusually hot cleaning day or an overcrowded store while shopping impose an unexpected physical drain. Even the best organized homemaker cannot anticipate all of the emergencies of cleaning, cooking, shopping, and child-raising.

These emergencies interfere with good diabetes control and, if they make her delay a meal or engage in too much activity she might have an insulin reaction. Oral therapy, where possible, may reduce this particular hazard and alleviate some of the other problems. But diabetes, as such, will remain more of a threat for women than for men.

What are the problems of pregnancy?

Before the advent of insulin, diabetic women rarely were able to achieve pregnancy. Today, with proper treatment, the diabetic woman may be as fertile as the normal woman, and has an equally high probability of surviving the pregnancy.

Regardless of previous treatment, the pregnant diabetic will require some form of medication—either insulin or an oral drug. Morning sickness may carry a special threat to the mother and be even more dangerous to the unborn child. Where the pregnant diabetic has any difficulty with food, she must notify her doctor at once.

If she takes insulin, the requirements may gyrate wildly during pregnancy, making regular urine and blood tests for sugar and acetone extremely important.

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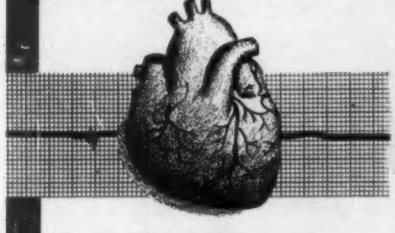

your doctor then has a reliable basis for future comparison if coronary trouble is suspected in later life.

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concerned, the woman with relatively recent diabetes has a better chance than the woman with long-standing diabetes. Until about 10 years ago, pregnant diabetics suffered a much higher infant loss before, during, and soon after birth. A number of infants who seemed to be developing well until about four weeks before birth, died in the womb for reasons still unknown. Another child-bearing difficulty arose from the fact that diabetic mothers usually have infants that are too large for an easy or successful delivery.

Today, with careful teamwork on the part of the physician who cares for the diabetes, the obstetrician who attends the pregnancy, and the pediatrician who cares for the infant after birth, there has been a dramatic improvement in the number of successful pregnancies. Instead of waiting for the pregnancy to run its full course, the baby is often delivered before it grows too large or dies in the womb during the last weeks of gestation. Best time for delivery is often about three to four weeks before the normal time of birth.

What is the status of present diabetes research?

Scientists all over the world are making an intensive study of diabetes, its causes, its effects, and possible cure. The new oral drugs have been a great stimulus to research and are currently being used in studies which may help determine the mechanism of insulin and how it works in the body.

Use of such new scientific tools as the electron microscope has made possible a close study of the cells in the pancreas where insulin is created and stored, and may provide clues to some possible causes of diabetes.

Altogether, research has taken on great vitality and the prospects certainly look good. Particularly promising is the work being done to detect in advance the possibility of diabetes and then taking preventive measures to stop or delay its actual onset.

What is pre-diabetes detection?

Pre-diabetes detection is the means of determining in advance whether a person is likely to become diabetic. This could be the first step toward possible prevention of the actual onset of the disease. According to Dr. Hugh L. C. Wilkerson, chief of the U.S. Public Health Service's Diabetes Field Research Unit, if the pre-diabetic state can be detected, "early intervention to prevent or halt its progression can be attempted."

Doctor Wilkerson holds that the ideal state for pre-diabetes investigation is found in the pregnant woman. Studies show that:

Big babies of 10 pounds or more are born to 20 percent or more of pre-diabetic mothers, usually 10 to 20 years before the actual onset of the disease. In 20 percent to 40 percent of the cases where the infant is stillborn or dies shortly after birth, the mother may develop diabetes within the following five year period.

Another approach to the problem has been made by Dr. Stefan S. Fajans of the University of Michigan Medical School. Doctor Fajans does not confine himself to pregnant women but has shown that it may be possible to detect throughout the general population certain latent abnormalities of carbohydrate metabolism long before the appearance of diabetes.

Using a glucose tolerance test in which cortisone is first administered to heighten any latent abnormality of sugar metabolism, Doctor Fajans has achieved positive responses indicating a pre-diabetic state in individuals still not diabetic. Follow-up over a period of one to six years has confirmed the accuracy of these tests.

Still another pre-diabetes test has been reported by Dr. Lillian Recant of the Washington University School of Medicine, St. Louis. This test uses an intravenous injection of tolbutamide following the administration of cortisone and is extremely sensitive and reliable. An abnormal tolbutamide response, in cases where the response would be normal without the stress induced by cortisone, indicates a pre-diabetic state.

Can diabetes be prevented?

Today, diabetes cannot be prevented. However, with accurate tests for the pre-diabetic state, it may become possible to delay the onset of diabetes.

Doctor Fajans, working with 12 young, non-obese patients who were so mildly diabetic that the overt symptoms were not yet present, administered tolbutamide for periods lasting from two to 17 months. In six of the patients, response to the glucose tolerance test became normal during treatment. These studies, declared Doctor Fajans, "could have important bearing on the problem of diabetes prevention."

What are the chances of an ultimate cure?

At present, although we have not mastered diabetes, we have learned to control its symptoms. It is no longer invariably fatal. We can recognize it, treat it, reduce its complications and, what is more, do all this with a minimal intrusion into the normal routines of daily life.

Curing diabetes is a far more complex problem. To do this we will have to determine the causes of the disease or diseases, as well as the various mechanisms within the body that bring on the symptoms of diabetes. But we have made tremendous progress within the last three or four years and, as we continue to learn more, the possibility of a cure is certain to come within reach. END

How Working Mothers Solve Problems at Home

(Continued from page 41)

have a sense of unity, parents must place before everything else the needs of the family as a whole. They must work out their problems together and the decision that mother should work must be a joint one, flexible enough so that if things don't work out as planned, alternative choices can be made gracefully. The mother who goes out to work for reasons unacceptable to the other members of the family jeopardizes its stability. It's foolish to think that everything can be just the same as before except for a little rushing in the morning and at dinner time. Without the cooperation and understanding of all, a second full-time job —for homemaking itself is a full-time job for even the most efficient housekeeper—can only cause a woman to be chronically tired, cranky, resentful, and certainly no companion for her husband.

Almost every working mother will agree—even those few who can afford adequate paid help at home—that she is constantly under some strain in her efforts to meet all the needs of her job, her husband, her children, her home, her friends, and her community. She never quite feels she is doing all she would like to do. But the most difficult problem is that of combining her work load at home and her job. According to one study, the typical working mother spends an average of 34.4 hours a week at housework, compared to the full-time homemaker's 56.4 hours.

Many a working mother feels so guilty about being away from her children several hours a day that she makes excessive demands upon herself to prove that her children are being deprived of nothing because of this. She attends every parents' meeting, every school function, has more than the usual conferences with teachers, takes the children to every desirable play or concert, and hopes that the gratification of each whimsical request will make up for her long absences.

She drives herself to exhaustion trying to do a superior job of homemaking in spite of working. Every moment of the day is planned and utilized from the early morning until she drops limp as a rag doll into bed at a late hour, dissatisfied with her inability to do everything she had planned.

Most child development authorities agree that mothers should stay home during at least the first six years, the most crucial years of child rearing. The Midcentury White House Conference on Children and Youth commented in its report: "It may well be questioned whether most mothers can, without undue strain, carry a full-time job and still give responsive and attentive care to the physical and emotional needs of small children."

The dependence of little children upon their mothers is obvious to all, but it is a mistake to believe that a pre-teen-age or teen-age child can

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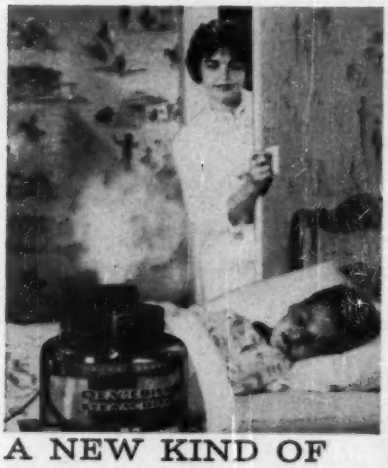

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get along just as well alone at home after school or with an impersonal domestic worker unless the parent has planned the time constructively beforehand and her influence is pervasive. The older child may not need physical care but his need is great for a wise, friendly listener who will not hesitate when necessary to lay down the firm hand of mature judgment. Talking things out is an important part of resolving the numerous conflicts that are part of growing up.

If you can't be there when your teen-ager arrives home from school, be sure that someone whose judgment you value can substitute for you. Lack of supervision often amounts to permissiveness. Under the guise of being accepting, permissive parents fail to define for the youngster the boundary lines within which he may act independently. In this way they deny him the security he gains in the knowledge that mother and dad will protect him from the results of his immature self-discipline.

MOST mothers will agree that having a job away from home adds new problems to the usual challenges of child rearing. But since they differ in their personalities, their marital and economic circumstances, their standards and goals, their education, and other less tangible factors, all of their problems are not the same. One mother may be seriously worried about her difficulty in getting the children to bed on time, while another who puts them to bed equally late, is concerned that she cannot help them enough with their homework. The fastidious housekeeper may be under a strain that she cannot keep the house as clean as she used to, but unimpressed by her children's tense, restless, quarrelsome behavior.

The most noticeable problems are the ones created by mother's absence from home. Depending, of course, on her understanding, her planning ability, her hours away from home, and whether she has made adequate arrangements for after-school activities, her children are likely to have more freedom than they can handle wisely. This is often true even when a parent substitute is present.

The child who is inadequately supervised or who has not been guided to accept reasonable limits often feels insecure because he senses that the world is too much for him to cope with alone. Sometimes he misbehaves to test his parents, to see if they will stop him, and sometimes he gets into trouble simply for want of direction. His anger toward his parents may find expression in destructive and anti-social behavior. Bullying, vandalism, petty thievery, premature sexual experience are the common behavior problems which reach the headlines of our newspapers. The mother's absence is not wholly to blame—authorities have found that mothers of these youngsters often have failed to supervise and control their activities for reasons other than gainful employment. Children whose employed mothers provide adequately for supervised activity in their absence have been found to be as well-behaved as most.

Feeling out of touch with things at home troubles some working mothers. Especially if she is away for long hours, she feels something like a visitor in her own home. For the rejecting, overprotective mother this evokes much guilt, or perhaps guilt feelings about her working make her feel out of touch. She is under pressure to be constantly doing things for her children. For this mother, a possessive nursemaid or baby sitter is a source of irritation. She fills too adequately the job that mother has given up and seems to take with her the special privileges and prestige which she thought could not be lost.

If at all possible, a mother with this problem would be wiser to stay at home until her children are of school age or find some means of earning money at home. A more impersonal arrangement such as a day care center might meet her needs more comfortably.

ALL children have problems in growing up and many times those with the most severe disorders have mothers who have never worked away from home, but certain kinds of behavior problems seem to occur frequently among children whose mothers work.

Emotional tension is one of these.

The child seems to be on edge, fidgety, easily irritated, or brought to tears. He may have difficulty conforming in a group situation. His attention span may be short and he has difficulty sticking to his school work so that his achievement is below his capacity. He may bite his nails or nibble excessively between meals. He may be reluctant to go to sleep at night and seek repeated excuses for getting up once he is in bed.

OFTEN working mothers complain of baby's wakefulness, getting up at night and wanting only to be held. He's been cared for by impersonal strangers all day and his need for a little loving wakes him at a time when he knows for sure that mother is there. In back of all this tension there is almost always a hurried, tired, irritable mother who herself is under constant emotional strain. Perhaps she's too overwhelmed with fatigue and the struggle for existence to see that the children need proof that she enjoys and loves them.

Other factors contribute to the strain. If mother has a part-time job her family is lucky indeed, but arriving home at six or six-thirty usually means that dinner is served late. If someone has called the children in earlier and seen that they are bathed before dinner, it helps, for not many women can plunge into the kitchen and roll up their sleeves for work the moment they arrive. The children have so many things to tell, everyone is quite hungry, and jangled nerves are screaming for peace. It's a rough job now for mother to sit down patiently and be an interested listener. Time is a valuable commodity in her life. But it's rough on the youngsters, too, to hold it in and wait.

A surprising number of children whose mothers work go to school without eating breakfast. Perhaps mother thinks they are old enough to prepare it themselves, but many children don't think it much fun to eat alone in a lonely house and would rather hurry out to meet their friends. Only later on, the growling tummy or headache due to hunger makes them restless and irritable in school and it is difficult to concentrate on their work.

Mother is frequently too tired to mobilize her strength for the last big responsibility of the day—putting the children in bed. She's too tired to be firm about bedtime rules when children nag to stay up to watch TV, and can't just send them to bed. You've got to take a little time to see that they have bathed or washed properly and brushed teeth. You'd like to read a chapter of that book you're both enjoying so much and see that each one goes to bed with all the minor troubles of the day unloaded and a hopeful curiosity about tomorrow.

Emotional immaturity is a problem we frequently see in younger children of working mothers, although it isn't limited to such families by any means. Children who receive too little as well as those who receive too much love have trouble standing on their own emotionally. Their need for love becomes excessive and it may be manifested in many ways. Lack of attention at home may lead to unacceptable devices for attaining it. One of these devices is hypochondriasis. The child seeks special care and affection by imagining he is sick or making much of the slightest disturbance in his health or safety.

FEELING uncared-for may cause a child to respond with seemingly unexplainable acts of aggression against children whom he considers more fortunate. Once in a while we see a child who seems to hate everyone. He trips the girls when they are having fun. He and his family are in need of professional help.

Perhaps a child's need for love will reveal itself in a lack of emotional strength. He has no self-confidence; he is apprehensive and fearful of the slightest new experience, afraid to go on a trip with his class, afraid to try a new game, sit in a different seat, talk to a new classmate. He clings to the status quo and mistrusts all adults. To such a child, mother's working is traumatic.

Be an efficient housekeeper. Make use of available help. Give even the little ones chores to do, not just "busy work" but chores which they can do well enough so that it's a genuine help. Even a six-year-old can hose off a patio or wash bathroom sinks adequately.

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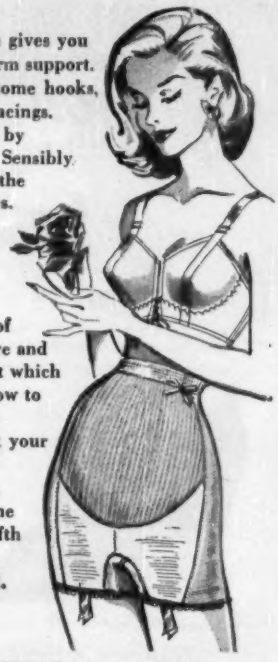

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remember that taking time occasionally to teach a child some household operation pays off in more time for you to do other things, and his self-esteem will be enhanced by the knowledge that he's an important person upon whom his family depends.

Start the day right. Plan ahead so that you will not be rushed. Have a schedule, and, within reason, stick to it. See that the children are bathed the night before, the next day's clothing set out, shoes polished, homework finished, and books gathered together, ready to pick up. Prepare lunches at night or before the family rises if that is necessary. In other words, leave for the morning only those things which cannot be done at any other time.

Guide the children toward constructive interests and hobbies. Of course this is not something done on a schedule. It is your dinner-table talk, your leisure time spent with the family, the books you bring home, the kind of vacations you take. Just as two objects can't fill the same space, two activities can't occupy the same time. Boys who go fishing Sunday morning with dad can't be simultaneously breaking into the school building to make a shambles of the classrooms. The interests and hobbies a child encounters in his own home will carry over to experiences outside the home, enriching his whole life.

Disciplining from a distance is a very useful skill if the working mother can develop it. This simply means that the training and guidance she gives her children when she is at home are so pervasive and intrinsic a part of her family that in her absence they won't do anything she wouldn't approve.

ONE working mother taught her children three rules to keep in mind when attempting something new:

Think before you do it.

Ask yourself, "Is it constructive?"

Ask yourself, "Would my mother and father like me to do this?"

Planning the children's activities before leaving home takes a little time and forethought but leaves the sitter and the youngsters something to fall back on, and pays dividends to you in peace of mind. This is especially useful with pre-schoolers, sick-in-bed school-agers, and on rainy days.

If planning a schedule is not practical, at least prepare a list of acceptable activities and acceptable TV programs and post it in a conspicuous place. It may involve a little extra work like trips to the library or gathering the needed supplies. This kind of planning is better discipline than any punishment because it defines the boundaries of approved behavior before a child gets into trouble.

AN occasional phone call during coffee breaks and at lunch time does more than relieve your anxiety—it gives the youngsters at home a chance to let off steam and to know that you're still looking after them even though you are not actually there.

Giving a child chores to be done after school is still an effective, if old-fashioned, way of being sure that his time is constructively occupied until you get home. Homework and chores should be done before play. It's a habit that will serve him well later on.

Keep in mind that more than any other single factor your own mood sets the tempo for the day. If you are harassed and confused when you leave, you are sure to hear of trouble when you return. But if you take time to be orderly in helping the children and the sitter with plans for the day, if you've been patient, even-tempered, unhurried, things are much more likely to run smoothly.

Train the children to be as independent as possible for their level of maturity. You would do this even if you weren't working, of course, but it is certainly of even greater importance now. Being less dependent upon you makes it easier for youngsters to accept your absence. It is good for them when still little to become accustomed to having someone else look after them for brief periods so that there will not be too great an adjustment to make. With a baby, it is wise to have the helper looking after him some, before you have taken a job.

As early as possible let the children get practice at making decisions on their own. At first it can be such simple things as how to spend an

allowance or what to serve birthday party guests, but by the time he is six or seven a child can decide sensibly (most of the time) whether or not to wear a sweater to school. This will help him later on in planning his study time and making other decisions.

Make a point of attending school activities open to parents even if it occasionally means taking time off from work. It's not easy for all children to understand that your going to work is for their sake as well as yours. Many children feel that if mother really did prefer to be home looking after them she would make it her business to be there.

Make a careful effort to show your interest in your youngster's activities. Your boy can't develop much enthusiasm for fixing up the classroom for Public Schools Week if you aren't coming to open house. And if you are the only mother who doesn't show up for the class play or the class reading demonstration it's hard for him to care about doing his best.

Take time when you arrive home to listen to the children's tales of the day's events. Even if you're late getting home, you won't save time by refusing to listen, because there will be too many interruptions. Sit down, enjoy a snack with them if you like, and hear them out, if only for 10 minutes.

Most working mothers, the minute they open the door, are overcome by an avalanche of newly drawn pictures, objects of art, test papers, announcements, requests for permission, and tales of other children's naughtiness. Be sympathetic. Even if you think you should, save the reprimands for a little later; try to give the children genuine proof that the best part of the day is when you are home again with them. All the hours you have been away are not half so important as the time you are with them.

Keep bedtime a happy time. A definite time should be set for bath and bedtime. Five- and six-year-olds still need about 12 hours sleep. This will be shortened as the child matures physically, but from his infancy he should become accustomed to adhering to such a rule so that there will be no fussing or argument.

At bedtime every child is entitled to at least a little time alone with mother, or dad if he prefers. He may need to unload some very private thoughts or fears, sometimes thoughts which seem just amusing to us but quite meaningful for him. Each of your children needs to feel that no matter how much you must disperse your attention, your love for him has not been diluted, and that no matter how you have had to rebuke or punish him during the day, tomorrow will bring a fresh start and new adventures.

Enjoy week ends and vacations

(Continued on page 75)

CHILLED BLOOD STOPS HEART FOR SURGERY

A METHOD of stopping the heart for as long as an hour for cardiac surgery by chilling it to 62°F. or below has been reported by a group from the University of Minnesota Medical School. At this temperature, achieved by sending cold blood through coronary arteries that feed the heart muscle, the heart goes into a complete standstill.

This gives surgeons an opportunity to operate on an immobile and dry heart while a heart-lung machine maintains circulation to the rest of the body. Formerly drugs were used to stop the heart, which started again when normal circulation was restored and the returning blood washed away the drug.

The chilled-blood method has several advantages over the use of drugs, said Dr. Vincent L. Gott, who described the procedure before the Scientific Sessions of the American Heart Association. Cold blood can be sent through the heart muscle from time to time if desired (the Minnesota team generally kept some blood going through the coronaries for about two-thirds of the time the heart was in standstill). This prevented oxygen "starvation" of the muscle and minimized undesirable changes in the chemistry of the heart, such as depletion of its high-energy reserves. With the new method it is also possible to still the heart for much longer than is usually considered safe with drugs.

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How Meat contributes to America's YOUTHPOWER

*A Salute to the Youthpower Congress**

It is said that the greatest natural resource of a nation is its youth. On the intellectual, moral, and physical productivity of its youth depends the future security of this and every other great nation. The nutritional health of this priceless segment of our country deserves the attention of every American, for good mental health, good physical health, good social integration, and good citizenship, all gain from good nutrition.

Meat and other basic foods play an essential role in nutrition during the growth and maturity years. Meat's outstanding contribution of nutrients to the daily diet is recognized by nutritional authorities. No other main-dish food in Western man's diet exceeds this contribution. Because it is a major source of top quality protein in our daily diet, meat can be depended upon for continued fulfillment of America's protein needs—for young and old, whether in health or in disease. In addition to the significant amounts of highest quality protein, all meats—including beef, veal, pork, and lamb—provide the gamut of B vitamins as well as necessary minerals such as iron, potassium, and phosphorus.

In saluting the Youthpower Congress, the American Meat Institute takes pride in its continuing efforts to keep America the best fed nation in the world by helping to build its Youthpower through good nutrition.

*The National Youthpower Congress sponsored by the National Food Conference to convene in Chicago, February 11-13, 1960.

American Meat Institute
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TIPS *for your home and family*

PRACTICE SAFETY FIRST . . . POISON-PROOF YOUR HOME TODAY

Statistics of accidental poisoning in the United States are grim — almost 250,000 youngsters under five take some kind of poison, and about 300 to 400 will die each year. In 1959, about 1400 adults and children died from accidental poisoning in this country.

HOW DO POISONING ACCIDENTS HAPPEN? Here are a few reports from the University of Michigan's Poison Control Center: Two youngsters feed aspirin tablets to each other "like popcorn." A baby swallows half a tube of airplane glue. A mother accidentally adds boric acid to her baby's formula, thinking it's sugar. A cook breaks her oven thermometer over the roast.

Dr. George H. Lowry, physician in charge of the center, says, "Medicines are by far the greatest offenders. The major single item is aspirin. The second most common cause of poisoning is cleaning and polishing agents. Cosmetics, although they seldom contain very toxic agents, constitute the third most frequently encountered group of substances ingested." Other frequent causes of poisoning he lists includes sedatives, kerosene, ink, and thyroid tablets.

WHAT CAN YOU DO IF YOUR CHILD TAKES POISON? The Committee on Toxicology of the American Medical Association makes the following recommendations on first aid for poisoning:

SPEED IS ESSENTIAL. The aim of first aid measures is to help prevent absorption of the poison. First aid measures must be started at once. If possible, one person should begin treatment while another calls a physician. Save the poison container and material itself if any remains. If the poison is not known, save a sample of the vomitus.

WHAT TO DO BEFORE THE DOCTOR ARRIVES. In swallowed poisons, in all cases except those indicated below, remove poison from patient's stomach by inducing vomiting. This can't be overemphasized, for it is the essence of the treatment and is often a lifesaving procedure. Prevent chilling by wrapping patient in blankets. DO NOT give alcohol in any form.

DO NOT INDUCE VOMITING IF:

- Patient is in coma or unconscious, or is in convulsions.
- Patient has swallowed petroleum products (kerosene, gasoline, lighter fluid, etc.), or if he has swallowed a corrosive poison (toilet bowl cleaners, rust removers, drain cleaners, styptic pencil, household bleach, ammonia water), or other acids or acid-like corrosives.

IF THE PATIENT CAN SWALLOW after ingesting a corrosive poison, the following substances may be given:

- For acids: one tablespoon to one cup of milk, water, or milk of magnesia.
- For alkalis: milk, water, vinegar, any fruit juice. For patient one to five years old — one to two cups. For patient five years and older — up to one quart.

(over)

TIPS for your home and family (continued)

INDUCE VOMITING by placing the blunt end of a spoon or your finger at the back end of the patient's throat, or by use of this emetic — two tablespoons of salt in a glass of warm water. When retching and vomiting begin, place patient face down with head lower than hips. This prevents vomitus from entering the lungs and causing further damage.

INHALED POISONS SHOULD BE TREATED AS FOLLOWS:

- Carry patient to fresh air immediately. Don't let him walk.
- Open all doors and windows. Loosen all tight clothing.
- Apply artificial respiration if breathing has stopped or is irregular.
- Prevent chilling by using blankets. Keep the patient quiet.
- If patient is having convulsions, keep him in bed in a semidark room; avoid jarring or noise. DO NOT GIVE ALCOHOL.

FOR SKIN CONTAMINATIONS, apply a stream of water on the skin while removing clothing. Drench the skin by using a shower, hose, or faucet. Cleanse the skin thoroughly with water; rapidity in washing is most important in reducing extent of injury.

FOR EYE CONTAMINATION, hold eyelids open, wash eyes with gentle stream of running water immediately. Delay of a few seconds greatly increases extent of injury. Continue washing until physician arrives. Don't use chemicals; they may increase extent of injury.

FOR INJECTED POISONS (scorpion, snake bites, etc.), make the patient lie down as soon as possible. Apply a tourniquet above injection site (e.g., between arm or leg and heart). The pulse in vessels below the tourniquet shouldn't disappear, nor should the tourniquet produce a throbbing sensation. The tourniquet should be loosened for one minute every 15 minutes. Apply an ice pack to the site of the bite. Carry the patient to the physician or hospital; do not let him walk.

FOR CHEMICAL BURNS, wash with large quantities of running water (except those caused by phosphorus). Immediately cover with loosely applied clean cloth. Do not use ointments, greases, powders, and other drugs in first aid treatment of burns. Treat shock by keeping patient on his back, keeping him warm, and reassuring him until arrival of physician.

HOW TO POISON-PROOF YOUR HOME.

- Keep all drugs, poisonous substances, and household chemicals out of the reach of children.
- Do not store nonedible products on shelves used for storing food.
- Keep all poisonous substances in their original containers; don't transfer to unlabeled containers.
- When medicines are discarded, destroy them. Don't throw them where they might be reached by children or pets.
- When giving flavored or brightly colored medicine to children, always refer to it as medicine — never as candy.
- Do not take or give medicine in the dark.
- READ LABELS before using chemical products.

How Working Mothers Solve Problems at Home

(Continued from page 71)

with your children. If going to church together, sharing holiday festivities, hobbies, trips, and excursions together are essential experiences for establishing a sense of family strength and unity, certainly they are doubly essential in a family where children are frequently deprived of mother's loving care. You are probably thinking that after you have caught up on all those errands put aside until the week end, the marketing, housecleaning, mending, ironing, and perhaps even a few gardening chores, you are too worn out to even daydream about going clamming Sunday morning, or searching for little animals in the tide pools, or visiting some historical site your 10-year-old is studying about in school.

Share your own special interests with the children; let them be near you sometimes when you are engaged in your own projects; don't impose your interests upon them but let them see your enthusiasm, talk about it in a simple, natural way. It will be rewarding for you to see how often their love for you, their inner need to be like you, will cause them to absorb your joy in gardening or photography or rock collecting or whatever it is you love to do. Share their interests too; respect them even when they seem meaningless. Perhaps when you were young you too had a ridiculous passion for something that seemed equally silly to your parents like collecting bottle caps or baseball cards.

As soon as they are old enough, let the children help to decide what shall be done on a Sunday outing or a vacation.

Combining homemaking with a full-time occupation and bringing up a family of well-adjusted, self-reliant young people is an almost superhuman task, but it can be done. It's a tremendous challenge; it requires more effort and thought, but it is not impossible. In fact, many working mothers are bringing up children today who are as well-adjusted or better than they would have been otherwise. END

NEW HORIZONS
a suggestion we hope proves helpful

Your Child's Curiosity

Much of your child's later learning depends upon his freedom and encouragement to explore, to experiment with objects, and to ask questions freely

by Roberta Collard
Child Psychologist

A child needs freedom to explore, but he also needs limits for his safety. At the age when he is "into everything", it is a good idea to put dangerous or breakable objects out of reach; however there should be many objects he *can* be allowed to handle and only a few he must be trained not to touch.

Early curiosity is stimulated by toys of various sizes, shapes, colors and textures, especially if they are a bright color or if they move or make sounds.

Experimentation is encouraged by toys which do not break easily and have several play possibilities (such as blocks). Most children like to take things apart. To keep this urge from being destructive, some toys should be chosen with this in mind. Older boys often enjoy taking apart an old alarm clock or motor, especially if an interested adult helps explain it to them.

A child's questions deserve respect (whether they are for knowledge or sociability), and one should answer honestly as much as he asks and can understand. Better yet, if possible, help him find the answer himself, by questioning him, showing him, or helping him look it up in a book.

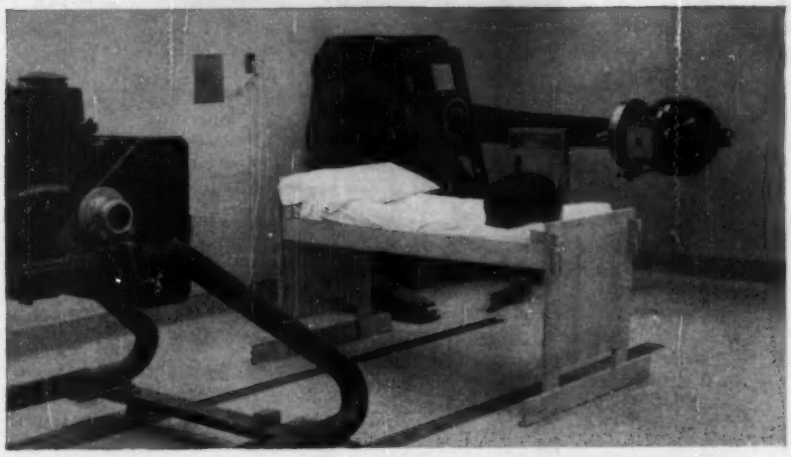
Questions about nature can be stimulated by showing children interesting rocks and shells, by letting them plant seeds or taking them to the zoo.

Most important in child's learning is that *you* be interested along with him, for he will be encouraged by having his interests rewarded with friendly attention.

Youngsters love to sink their teeth into the full-bodied goodness of Wrigley's SPEARMINT Gum. Tastes so delicious, satisfying yet not rich or filling and chewing helps keep teeth clean and nice.

The "Bomb" That Can Heal

(Continued from page 39)



Teletherapy room at Bassett Hospital, showing two cobalt-60 "bombs." Patient lies between the two units, receives uniform irradiation to all parts of body.

asleep with a general anesthetic in the operating room. Then by inserting a needle in the bones—chiefly the breast and hip bones—we extract about half a pint of blood from some 50 different places. About five percent of that half pint of blood is actual bone marrow. The procedure takes about an hour.

The donor leaves the hospital the same day. There are no harmful effects. In fact, there is less loss of total fluid from the body than if a pint of blood were donated.

Q. Must the marrow come from an identical twin?

A. Transfusions of marrow from an identical twin have been uniformly successful. Transfusions from persons other than the patient himself or an identical twin are a difficult problem, but we have made some successful transplants.

The major effort in our laboratory has been applying what we learned from animals to the problems of man. In addition to the multiple aspiration technique from volunteer donors, we have worked out methods for obtaining large quantities of human bone marrow from sterile post-mortem examinations. We have helped establish a bone marrow bank operated jointly by our laboratory and the department of pathology of Massachusetts General Hospital, Boston.

We have also made intensive studies of ways to preserve human bone marrow. Our bank contains a fairly large number of samples. Marrow can be frozen in glycerol at 115° below zero Fahrenheit and kept for at least several months. We have preserved some for over a year now and 50 to 80 percent of the marrow cells appear to be in a normal state.

The marrow in our bank is from patients with leukemia and other diseases which were in complete remission when the marrow was taken from them. We plan to keep it for use when and if the diseases recur.

Human bone marrow, which looks much like blood except that it contains fat particles, is stored at 115° below zero.

Q. Would you explain that in more detail?

A. Let's take the case of a little girl with leukemia. She has been treated with drugs, which caused remission of the disease. Bone marrow samples showed her body to be free of any leukemic cells. We took the bone marrow from her by multiple aspirations and stored it in our bank. If the leukemia recurs at a later date, we could give her whole-body irradiation and afterward transplant in her body her marrow taken from the bank.

Q. What has been your success with this treatment?

A. We have tried it only on patients beyond all hope and where every other type of therapy had failed. We found it will prolong life a few months and in several cases it even brought about a complete remission of leukemia. But because this type of treatment is relatively new, we can't make any statement as to how long the remission will last.

We have demonstrated that human bone marrow can be transplanted without any harmful effects. A 16-year-old girl, who was in the final stages of acute leukemia despite conventional treatment, received whole-body irradiation and bone marrow transplants from her sister. She became clinically well and attended school for several months before the disease recurred.

This and similar cases of remission of leukemia through whole-body radiation and bone marrow transplants—not necessarily from identical twins—make it apparent that such treatment may be of considerable benefit in some cases of leukemia. However, we still have many theoretical and practical hurdles before we are anywhere near curing leukemia by this procedure.

Q. Is it possible to give whole-body irradiation to a patient who has undergone such therapy previously?

A. Yes. We have used it a second time. However, repeated irradiations would eventually push the cells of the body beyond their ability to recover.

Q. Do you think whole-body irradiation and bone marrow transplants will some day make it possible to transplant such organs as hearts, lungs, and kidneys?

A. Yes. We are attempting that here. Dr. John Mannick of our group recently transplanted bone marrow from one dog to an unrelated dog that had been whole-body irradiated. After the successful marrow transplant, a kidney was removed from the donor and transplanted into the marrow recipient. This dog lived slightly over two months with his own kidneys removed and existing entirely on the transplanted kidney, which functioned perfectly well. Then the dog got distemper and died.

The animal's immune system had been weakened by irradiation and it

was unable to recover its resistance to infection. We are now working on the problem of restoring the immune mechanism after whole-body irradiation. In humans, this problem seems to be largely overcome as soon as new bone marrow grows.

Q. If a victim of A-bomb radiation can be returned to normal by bone marrow transplantation, why couldn't this procedure be extended to the whole population? Why couldn't all of us have bone marrow taken from us and stored in banks so that in event of an atomic attack those who suffered heavy doses of radiation could have their stored marrow transfused into their bodies and survive?

A. The problem of storage would be immense. But troops who work with atomic weapons and persons in jobs associated with atomic power should consider it in anticipation of accidental exposure to radiation. END

Electronic Watchdogs Guard Ailing Hearts

(Continued from page 55)

Another method for attaching an electrode to the heart without opening the chest has been worked out by Dr. Seymour Furman, resident surgeon at Montefiore Hospital in New York. He runs a wire to the heart through a large vein in the neck.

Until recently, both these methods had a severe limitation: After a few weeks, resistance would build up around the wire attached to the heart and more and more current would be needed to stimulate a response. Eventually the treatment became ineffective.

This problem seems to have been overcome by a research team at St. Joseph's Hospital in St. Paul. Dr. Samuel W. Hunter of the University of Minnesota and Norman A. Roth, chief engineer for Medtronics, Inc.,

from "The World is Young" by Wayne Miller

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Prunes—the naturally good fruit from California

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decided to try a "bi-polar" method. Instead of connecting the tiny second electrode outside the body, they sewed a tiny plastic patch directly to the heart and attached both electrodes to it. This technique has protected one patient effectively for more than six months and has been used "with good results" on 10 others.

There are other complications to long-term use of internal stimulation: Infection can develop around the wire leading through the chest. And with the through-the-vein method, the patient must keep taking anticoagulant drugs to prevent blood clots from forming around the wire.

Doctor Zoll and his colleagues are studying a new technique of internal stimulation which would eliminate the infection hazard: A tiny radio-frequency receiver would be implanted within the body and controlled by an external transmitter. So far, however, the idea has not proved suitable for use on humans.

Investigators at the University of California Medical School at Los Angeles are working along the same lines. They have conducted dog experiments in which surgically blocked hearts were started and maintained for days by radio transmission. The receiving apparatus, slightly larger than a silver dollar, was enclosed in dental cement and implanted between the back muscles and the rib cage. A conventional 200-watt radio transmitter was used to send signals.

AMONG the many other electronic devices already perfected are two monitors developed for use during surgery: the cardioscope and the cardiophone. Both are related to the electrocardiograph, which has been in use since shortly after 1900. Just as the older machine records heart impulses on paper, these newer inventions record them visually on an electronic tube and acoustically through a loudspeaker.

In the cardioscope, a pip of light bounces across a cathode ray oscilloscope, a screen similar to a television picture tube. The bounding dot of light crossing graph lines on the screen gives a visual image of the heartbeat and enables doctors to recognize any change immediately. It saves valuable time during surgery, since it is faster than the older method of reading an electrocardiograph tape.

The cardiophone is a further safeguard. It translates heart impulses into "beep, beep" sounds and allows the surgeon to go on with his work without watching the cardioscope screen. A change in tone or in the interval between beeps warns that something's wrong.

Though these devices are particularly valuable in heart surgery, they are beginning to be used more widely in other major operations and also on patients who have a low cardiac reserve or who are known to have heart diseases. Even in patients with normal hearts, cardiac irregularities sometimes occur during anesthesia.

ANOTHER electronic monitor is the cardiac alarm, used during or immediately after surgery and for patients with cardiac disorders. It converts each heartbeat into a neon flash and a sharp audible note (high A on the piano). If the time interval between any two consecutive heartbeats exceeds the time set by a control on the instrument (from one to 10 seconds), a loud, continuous note will sound. The cardiac alarm is also attached to a pacemaker so that electric stimulation may start automatically if the heart stops beating.

The use of cardioscopes to monitor patients during surgery and while they're recovering may someday become routine. Already some hospitals are using these machines to help relieve the shortage of specially trained nurses by playing watchdog over cases involving a cardiac risk. In an intensive therapy unit at Seaside Hospital in Long Beach, California, nurses can view the heart action of cardiac patients without leaving their station. By flipping a switch on a cardioscope, they may check on several patients, switching back and forth by pressing a button. Cook County (Illinois) Hospital will have a similar arrangement in its new 66-bed recovery room.

At the new Stanford-Palo Alto Hospital in California, an even more elaborate monitoring system for open-heart surgery is under consideration. This electronic installation would display on one instrument such measurements as a patient's temperature, pulse, blood pressure, and electrocardiogram.

The instrument could be transformed into an automatic nurse, engineers say, by feeding the information from the patient to a central control panel for an entire ward. A bank of recorders would make continuous records and operate a system of bells or alarms, so that when a patient's blood pressure, for example, rises above a pre-set level a warning is sounded.

Not all modern electronic helpers for the heart are as expensive as the $12,000 machine at Stanford. Many of the devices are within the reach of even hospitals with modest budgets and are finding increasing use all over the country. In Spring Valley, Illinois, for example, St. Margaret's Hospital got a brand new $350 defibrillator—thanks, ironically, to an emergency in which a quick-thinking doctor cheated death with a silver-plated spoon and a cord from an electric fan.

When a 19-year-old boy's heart stopped during minor surgery, Dr. Henry Jacobs quickly opened the patient's chest to massage the heart. But it went into ventricular fibrillation. The hospital had no defibrillator, so Doctor Jacobs ripped off the fan cord, bared the wires, wrapped one around a tablespoon, and fastened the other to a retractor.

HE placed the retractor on the boy's shoulder and touched the spoon to his heart (the small surface of a wire tip would have caused a burn). An assistant plugged in the cord, and after four jolts of current, the improvised defibrillator calmed the heart's fluttering.

The boy recovered and grateful townsfolk donated the money for a regular defibrillator for St. Margaret's.

Physicians and engineers have found many new uses for older, more familiar electronic inventions that make them important in the field of heart disease. The motion picture, television, tape recorder, radio, telephoto, and telephone are examples.

X-ray movies. Wartime aerial cameras have been adapted to help chil-

dren born with defective hearts by bypassing the difficulties of getting youngsters to remain perfectly still (and to stop breathing) while x-ray pictures are being made. Even though a child fidgets and breathes, the 20 x-ray exposures the high-speed camera makes in 10 seconds give the doctors enough information to determine the size and location of the abnormality.

Even newer is an improved x-ray motion picture camera which permits three-dimensional viewing of the heart in action. Two screens in the camera photograph two strips of film which may be projected together to give a three-dimensional quality to the picture.

Television. A device called the image intensifier gives an excellent view of the heart on a fluorescent screen and permits the transmission of a living image to a TV screen in an adjacent room where any number of physicians may study it. With the intensifier, the room can remain lighted while movies of defective hearts are made; on older fluoroscopes, the room had to be darkened and the physician had to spend about 30 minutes to "dark-adapt" his eyes before he could read the relatively dim image. The intensifier also reduces radiation exposure considerably as compared to earlier apparatus.

Another television advance is a small camera which can be mounted on a helmet worn by a surgeon to permit assistants and student observers to watch details of operations via a closed circuit system.

Tape recorder. The Chicago Heart Association is putting tape recorders to a new use in preventive medicine. Heart sounds of children are recorded on tape and later listened to by physicians, who detect any unusual noises. Children with abnormal heart sounds are referred to their family physician for diagnosis and medical supervision.

Radio and telephoto. Cardiac consultations with specialists located anywhere in the world may someday be possible through the use of short-wave radio and the telephotograph. A New York physician has described two experiments in which important data on several heart patients examined in the United States were sent instantly to Paris and Rome through these facilities.

Telephone. Cardiac conditions can be diagnosed over the telephone with a sensitive device hung around the neck of a patient while exercising.

Other electronic aids for the heart combine developments and discoveries as old as magnetism and as new as guided missile research. They include:

Electronic computers. High-speed electronic data processing machines, some of them developed for guided missile research, can make fantastically detailed studies of the heart's activity, providing new knowledge that could mean earlier detection and relief for heart disease victims.

Ballistocardiograph. Faulty hearts that escape detection by an electrocardiograph can be discovered by an electronic machine that operates like a miniature seismograph to record pulse movements. It utilizes the fact that each time the heart pumps blood into the arteries, there is an imperceptible backward thrust similar to the recoil of a rifle.

Pneumo-plethysmograph. Diagnoses of heart disease can be made from supersensitive electronic measurement of blood flow through the fingers and toes. Wires leading out from this machine to plastic cups on the fingers and toes detect the changes.

Cuvette densitometer. This electronic gadget gives a physician a running account of oxygen saturation in the blood as he moves the end of a catheter (a long, thin tube) to various areas in the heart.

Electronic stethograph. A cross between a stethoscope and an industrial inspection tool, this device picks up heart sounds too low to be heard through an ordinary stethoscope.

Cardiac transducer. Defects in the heart can be located more effectively when doctors can listen to its beat from within rather than through the chest. To get inside the heart, a tiny

UPI

BEAM OF LIGHT REPLACES SCALPEL

Chicago—Eye operation for benign tumor without surgical opening of the eye is performed at the University of Chicago Clinics with a new German device called a light coagulator. The $13,000 machine produces a 3600-watt pinpoint of light, brighter than sunlight, which coagulates tissue, making actual surgery unnecessary. The beam of light is directed into the eye with an instrument similar to an ophthalmoscope (a perforated mirror used to inspect the interior of the eye).

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transducer (a device for converting vibrations into electrical signals) has been developed. Mounted on the tip of a catheter and inserted in the heart via a vein, the transducer "broadcasts" the sounds of the heart to a tape recorder.

Electron microscope. About 150 times as powerful as the best light microscope, this instrument is exploring the minute structure of blood vessels. The electron microscope can magnify more than 300,000 times. At this degree of magnification, an ant would become large enough to span half the island of Manhattan.

Heartbeat recorder. A tiny, three-ounce cumulative heartbeat recorder is expected to help with research into coronary heart disease by opening the way to answers to such questions as: How hard does the heart work? What clues lie in the difference found between office workers and laborers, men and women, smokers and nonsmokers?

Cardiac tachograph. Used with a recorder, this device permits the recording of beat-by-beat cardiac rate, rather than an average rate. Unlike the electrocardiograph, the tachograph can record rate readings while the patient is exercising.

Spectral phonocardiography. This technique is an electronic substitute for the stethoscope. It converts heart sounds into graphs which can be cataloged into typical disease patterns.

Millikan oximeter. Used during surgery, this machine measures the redness of arterial blood in the shell of the ear as a means of determining the amount of oxygen being supplied to the brain.

"Party-line" stethoscope. A transistorized stethoscope will soon be available. It will allow as many as four physicians to listen to a patient's chest sounds at the same time. It can amplify sounds up to 10,000 times.

THE electronic and medical professions are working together on an increasing scale to remove the language barrier that has separated them and to work out new techniques that can be applied to the everyday needs of the family doctor. Engaged in the mutual effort are several professional engineering associations and medical research institutions. Industry is contributing by establishing medical electronics scholarships at Stanford and Columbia Universities.

"Modern electronic equipment and increased basic research could bring about the greatest advances medicine has ever known," says Dr. Louis M. Orr, president of the American Medical Association. "Electronic techniques are being used to tabulate and correlate increasing amounts of scientific data. In the future, this information will play an ever-increasing role in the diagnosis and treatment of disease. Our rapidly expanding population will require either more care from more doctors, or some means by which people can maintain health and need less medical service. Automation linked with preventive medicine appears to be an answer."

The wider use of electronic medicine will have two major benefits for all of us, according to Dr. Hugh A. MacGuire of the Atomedic Research Center, Montgomery, Alabama, who says:

"We envision using the latest techniques and tools of the atomic age—radioisotopes, computers, automation, new construction design, new materials—to bring the cost of health care down and at the same time provide better care." END

Sea Gulls Flying?

Once when hope within was dying
I saw sea gulls flying, flying,
Far from ship and far from sea—
Flying unafraid and free.

And their sure and perfect winging,
Set my laden heart to singing,
"If the sea gulls dare this land,
Stretching far from cliff and sand,

Then shall I not be believing,
Be of hope and faith receiving
From the unseen staff and rod
Of an ever-living God?"

Like the sea gulls, disappearing,
Though alone, I went unfearing—
Knowing God's almighty Hand
Shields His own on sea or land!

Edna E. King

Take a Winter Sports Vacation

(Continued from page 46)

equipped with reasonable cabins for overnight or week-end jaunts.

If you don't own your own ski equipment, you may rent or buy at almost any resort area. It costs between three dollars and seven dollars a day to rent all the clothing and equipment you'll need. Most resorts will also provide ski instruction at a nominal cost.

If you're interested in watching winter sports competition, time your vacation to coincide with the several local, national, and international contests scheduled throughout the winter. For instance, the Winter Olympics at Squaw Valley will feature some of the world's finest athletes competing in all of the winter sports.

WHERE TO WRITE

Write the following sources for information on locations of ski areas and winter resorts. Check the sports section of your local newspaper for current reports on nearby resorts.

State Agencies

ARIZONA, Development Board, 1521 W. Jefferson St., Phoenix, Ariz.

CALIFORNIA, State Chamber of Commerce, 350 Bush St., San Francisco 4, Calif.

COLORADO, Ski Information Center, 225 W. Colfax Ave., Denver 2, Colo.

CONNECTICUT, Development Commission, State Office Bldg., Hartford, Conn.

IDAHO, Dept. of Commerce & Development, State Capitol, Boise, Idaho.

MASSACHUSETTS, Berkshire Hills Conference, Inc., 50 South St., Pittsfield 40, Mass.

MAINE, Publicity Bureau, Gateway Circle, Portland, Maine.

MICHIGAN, Tourist Council, Stevens T. Mason Bldg., Lansing, Mich.

NEW HAMPSHIRE, Planning & Development Commission, Concord, N.H.

NEW MEXICO, State Tourist Bureau, Box 1716, Santa Fe, N.M.

NEW YORK, State Dept. of Commerce, 112 State St., Albany 7, N.Y.

NORTH DAKOTA, State Chamber of Commerce, 514½ 1st Ave. N., Fargo, N. Dak.

OREGON, State Highway Dept., Salem, Ore.

PENNSYLVANIA, Dept. of Commerce, Harrisburg, Pa.

SOUTH DAKOTA, Dept. of Highways, Pierre, S. Dak.

UTAH, Tourist & Publicity Council, State Capitol Bldg., Salt Lake City 14, Utah.

VERMONT, Development Commission, Montpelier, Vt.

WASHINGTON, State Dept. of Commerce & Economic Development, General Administration Bldg., Olympia, Wash.

WEST VIRGINIA, Industrial & Publicity Commission, State Capitol Bldg., Charleston 5, W. Va.

WISCONSIN, Conservation Dept., State Office Bldg., Madison 1, Wis.

WYOMING, Travel Commission, Capitol Bldg., Cheyenne, Wyo.

Canadian Agencies

Canadian Government Travel Bureau, Ottawa, Ont.

Alberta Government Travel Bu-

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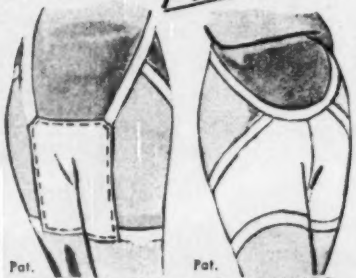

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reau, Legislative Bldg., Edmonton, Alta.

British Columbia Government Travel Bureau, Parliament Bldg., Victoria, B.C.

Ontario Department of Travel and Publicity, 67 College St., Toronto, Ont.

Quebec Provincial Tourist Branch, 710 Grand Allee Est., Quebec, P. Q.

WHAT TO BUY

The equipment you buy can have quite a bit to do with the fun you'll have on skis. For instance, poles should be made of hollow metal, bamboo, or glass fiber which are flexible enough to bend rather than break. The length of skis and poles is important.

Let the staff of a good ski shop determine the length according to your height and weight. They can serve your individual needs and determine the best equipment for you.

Your boots should be snug around the ankles, but toes should be able to wiggle. Wear cotton, nylon, or silk socks next to the skin and over these a pair of heavy all-wool socks.

Mittens, not gloves, long enough to cover the wrists, should be worn while skiing so fingers can be kept together for warmth. The palm of the mitten should be reinforced with tough leather for ski tows.

On sunny days, sunglasses may be necessary to protect the eyes from the ultraviolet heat ray element in reflected light from snow which can cause temporary blindness. Lenses should be shatterproof in goggle frames that will protect the eyes from wind and severe shocks. You may even need a sunburn lotion.

The cost of equipment is no more than for fishing gear. Skis and boots start at 20 dollars apiece; poles eight dollars; bindings five dollars; wax two dollars; goggles one dollar. END

"Medicine U.S.A."

(Continued from page 61)

Greatest attraction for the doctors was the collection of American scientific literature on display. Staff librarian Manuela Seydel said most were looking for information on the latest medical developments—especially concerning polio, cancer, and tuberculosis.

More than a third of the visitors to the Fair were from East Berlin and Soviet-controlled East Germany. Some physicians came from deep in the Eastern Zone in an effort to improve their scientific knowledge.

By every measurement, the U.S. State Department considered Medicine U.S.A. an unqualified success. Medical care proved to be a common denominator in the diplomatic battle for the sympathies of the East and West Berliners.

Charles F. Blackman, public affairs officer of U.S. Mission Berlin, put it this way: "Important to us was the universal acceptance of the subject matter. Not one negative attitude toward this aspect of American life was registered during the fair."

Decision to put Medicine U.S.A. on the road came after astounded fair officials totaled up the attendance figures in Berlin—483,290. They decided that other German citizens should be given an opportunity to see this important segment of American life.

Because of the complicated gadgets and medical equipment that are part of the exhibit, it was necessary to limit showings to large cities. After Dusseldorf, Medicine U.S.A. will travel to three or four other metropolitan centers before it is broken up and the equipment returned to its American owners. END

Science Looks at Fears

(Continued from page 7)

Technology evaluated the fears of a cross section of more than 100 psychologists and compared them with those of typical businessmen. The psychologists worried just as much about their jobs and marital difficulties and *more* about money. They were less anxious, however, about their health and the impression they made on others.

Is it true that the more honest and

sincere a person is, the less subject he is to fears and anxieties?

Yes. Psychiatrists at the University of Leyden examined the case histories of more than 2500 individuals whose personalities had been carefully analyzed. They found that the incidence of acute anxiety was three times as great among persons given to exaggeration, evasion, or pretense. Subjects evaluated by the psychiatrists as most frank, open, and sincere had by far the fewest anxieties.

Are people with high I.Q.'s less subject to fears and anxieties?

At Washington University School of Medicine, students were given standard tests designed to evaluate anxieties. Results were then compared with scores made on mental ability tests. Subjects who made the highest scores on the mental tests tended to have the fewest fears.

What is the best way to deal with fears and anxieties?

Seeking an answer to this question, researchers at the University of California Medical School subjected every means of alleviating fears and anxieties to careful test, observing its effect on men and women from every walk of life. The one method they found most effective is simple: Don't try to conceal your fears, don't keep them secret. Fears and phobias multiply and magnify when you keep them bottled up. Share your fears with another person. Get them off your chest, instead of brooding over them.

This will not only provide an escape valve for anxiety-produced tensions, but will also restore your perspective—and you'll find that many of the fears you've regarded as mountains will shrink to molehills. It will also permit you to sort out your fears and anxieties into two categories; the few which result from conditions outside your control, and the many which you *can* do something about by taking immediate action.

The university scientists concluded: The successful management of fear and anxiety seems possible *only* through the process of sharing and communicating them to another person. END

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Safety on Skis

(Continued from page 49)

condition is the major factor in ski accidents. Hundreds of ski meets are held annually yet probably no more than one and a half percent of ski accidents occur in a ski meet among experts, though they may spill at speeds of 60 miles an hour.

2. Gradually warm up and loosen the joints before you take off. Athletes do it in other sports, why not skiing?

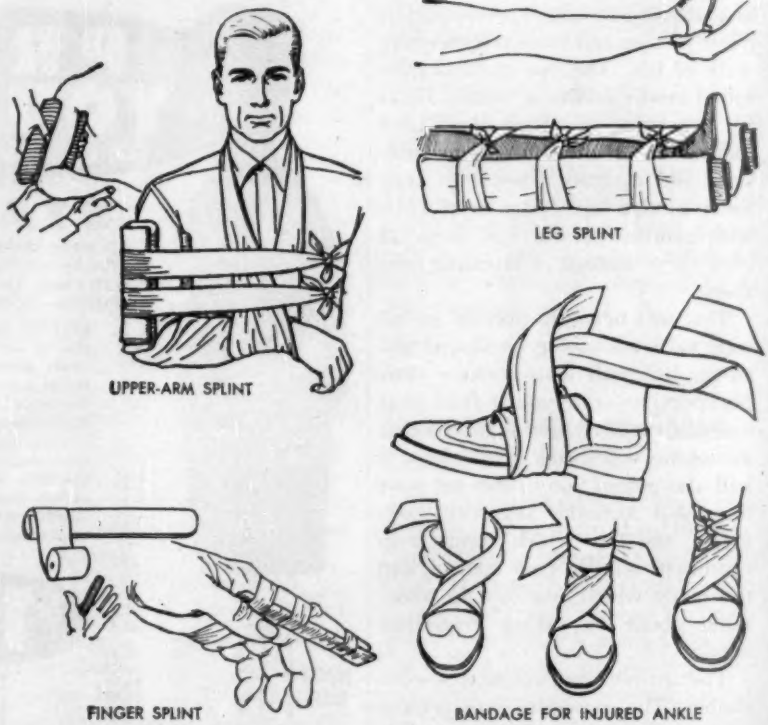
3. Avoid major runs when tired. Remember, ski injuries are most frequent in the evening when skiers are tired. Ski lifts play a part in this. Many a skier has been beguiled by a lift into a major downhill run after a tiring day of skiing, a feat he would have shunned if he had to climb the slope on foot.

4. Modern safety-release bindings have reduced the incidence of injury to the legs. A Ski Patrol survey of 1762 ski accidents indicated that 60.78 percent of the injured skiers were wearing old type bindings, while 35.75 percent were wearing safety-release bindings.

These bindings involve two different engineering principles. One device attaches the back of the ski boot to the ski, and opens when subjected to strong twisting force. The other binding, when put under stress, releases the connecting strap which binds the boot to the ski. Release bindings should come off at the heel and toe when strong force is exerted upon them, and the skier should be able to kick or twist out of them on flat ground without trouble.

However, many times this type of binding fails to release the foot during a fall because the skier has not properly adjusted it. He must test and properly adjust his release mechanism each day before skiing. Beginners should get an expert to show them how.

At the same time, the safety straps should be checked. These straps pre-



ABOUT 80 PERCENT of ski injuries are simple fractures. Splints can be made of branches, poles, skis, magazines, rolled-up newspapers. Belts or straps serve as binding. "Figure-eight" bandage helps sprained ankle.

The Ski Patrol: VIP's of the Snow Slopes

SKIERS ON MOST American slopes are protected by the Ski Patrol whether they know it or not. Before an area is opened for the day's skiing, members of the National Ski Patrol System, a committee of the National Ski Association, inspect the hills—"break trail," they call it.

They mark such hazards as partly covered rocks or stumps, fill indentations made in the snow by the body of a skier who has fallen, and rope off any incline or trail which, after a thaw followed by a freeze, becomes icy. Throughout the day, the patrolmen are ready to help any skier in trouble.

All Ski Patrol members work without pay, contributing their time and money to (as their official goal states) "work toward greater safety and thus greater enjoyment in the sport of skiing." Their only material rewards are the embroidered gold, silver, and purple stars, given in recognition of meritorious service, which they wear on their distinctive rust-colored parkas.

The work of the Ski Patrol does not end when tows and lifts shut down for the day. That is the time for one of the most important phases of the day's work. The entire Ski Patrol stationed at the resort makes a routine sweep of the whole area to be sure no skiers remain in the snow.

On several such sweeps in the West, injured skiers have been found and brought in by the patrol on toboggans. In one case recently, a man was found unconscious. The unspoken story of what had happened was written clearly in the snow: a broken ski embedded near a partly covered rock; a crumpled, motionless body at the base of a tree.

Two ski patrolmen, using small branches broken from an overhanging limb and their red avalanche cord, lashed their skis together to make an emergency toboggan. They carefully moved the unconscious skier down the mountain to a highway and transferred him to a hospital by automobile. Prompt treatment of his fractured skull saved the man's life.

To become an NSPS member, a man or woman must pass the American Red Cross standard 18-hour first aid course and the advanced course, which concentrates on winter sports accidents.

Skiing ability is tested before an examining committee. The candidate must execute various downhill runs and methods of ascent. He must make a 200-foot vertical ascent and descent carrying a 15-pound pack. He also learns to handle a rescue toboggan.

Members of the National Ski Patrol System have earned just recognition; they are among America's VIP's.

vent the skis from sliding downhill and endangering others in case of a spill. We have seen a loose ski come sailing downhill at high speed and break a person's leg at the bottom of the hill.

Here is good advice, too, from the National Ski Patrol:

1. If you have never skied before, take lessons. A professional can teach you how to avoid falls, or how to fall if you must. You may be able to learn golf and bowling from a book, but skiing needs more personal attention. Doctors blame 75 percent of skiing accidents on lack of training. This is supported by an army statistic showing that 73 percent of the skiing casualties among snow-bound troops had one month's training or less.

2. Many accidents are caused through collision. Usually victims get hit when they stop for a moment. If you must stop for any reason, get off the trail and put your ski poles in the snow above where you are standing as a sort of traffic signal. Always expect the unexpected—a skier darting out of the trees along the trail; another dashing down the hill just above; a narrow trail blocked by a fallen skier around the next bend.

3. When approaching a tow or lift, stop a reasonable distance from a line of skiers waiting for the tow. Show-offs who try to slide to a stop at the line have caused serious accidents.

4. Never ski alone. If you get hurt, a ski buddy can always go for help. If a fallen skier is found, others should stop and see if he needs the ski patrol. If so, someone should be sent after the patrol with careful instructions on the accident location. One skier should always stay behind and keep the injured one comfortable. All skiers should have a knowledge of elementary first aid.

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Helpful Hints FOR BETTER LIVING

This page contains information about products and services of interest to *Today's Health* readers. Your requests will be promptly handled. Simply circle the corresponding number on the Readers' Service Coupon and mail the coupon to us today.

Edited by BEVERLY MASTRI

Mid-winter is the time when those of us who can't be in warmer climates stay close to home. Below are some booklets which may help brighten your activities during the winter months.

"I Learned to Hear Again." A new booklet offered by the Zenith Corporation will aid those with a hearing problem. Containing several tips for better hearing mastery, the realistic experiences of the author provide good reading. For your copy, circle 510.

Sugar Substitute. Calories count. Help cut them out with **Sugarless Sweetener,** a free-flowing saccharine powder. Now in a handy, attractive shaker-top bottle. Two teaspoonfuls of **Sugarless Sweetener** provide the sweetening effect of a cup of sugar. For information, a calorie chart, and a generous trial-size sample, circle 511.

"Eat and Reduce Plan." As a result of continuing research, the **Knox Gelatine Company** has developed a new reducing plan. It is based on sound nutritional principles and includes a choice-of-foods diet list chart. For your free copy, circle 233.

Better Grooming. The services of a **Luzier** cosmetic consultant will prove to you that fine cosmetics lead to better grooming. Investigate this personalized cosmetic service based on proper selection and application in relation to individual requirements and preferences. For a descriptive booklet of these services, circle 123.

Art Talent Test. People of high school age or over can get a free art talent appraisal from **Art Instruction, Inc.** To receive the test that will help determine your aptitudes for this relaxing, profitable hobby, circle 416.

Low Calorie Kraut. Sauerkraut, the old-fashioned family food, shows new versatility in a 40-page recipe booklet prepared by the **National Kraut Packers Association.** For your free copy, circle 425.

". . . and at last we found a place where the snow was way over our heads."

Know How To Buy Stocks? For a free copy of a booklet prepared by Merrill Lynch, Pierce, Fenner & Smith, containing some plain talk about a simple business that often sounds complicated, simply circle 469.

Good Dental Habits. Prepared in cooperation with **Lactona, Inc.,** this cleverly written story is designed to teach children the proper care of their teeth. For a free copy of "The Adventures of Toby Brite and Bobby," circle 381.

Exceptional Children's School. At the **Brown Schools,** Austin, Texas, children with educational and emotional difficulties receive understanding guidance, ample recreation and a thorough academic program under the constant supervision of a competent professional staff. For additional information, circle 197.

Practical Solution to Baldness. For every type of baldness, a patented, undetectable **Max Factor Hairpiece** looks so realistic that it's like having real hair again. Simple, self-measuring kit enables you to order any style, custom-made, by mail with money-back guarantee of satisfaction. For full details, circle 120.

Guide to Baby Care. "A Doctor-Mother Speaks" is written in an easy-to-understand manner by an outstanding doctor who is also the mother of three. For this free booklet and a folder illustrating **Babee-Tenda** Safety Products, circle 302.

Relieve Cough and Congestion. In winter when your home air is warm and dry, use a **Walton Humidifier.** Upper respiratory infections, with their accompanying congestion and coughs, can be resisted by keeping the membranes of the nose and throat moist. One Walton can serve many rooms; some models, the entire house. For details and a handy free humidity indicator, circle 321.

Musical Multiplication Tables. Set to music, the **Bremner Multiplication Records** make multiplication a game. Drills and musical quiz game for each table. For complete information, circle 427.

"Bed Wetting and the Older Child," a booklet offered by the **Jolan Sales Company,** discusses some of the emotional factors involved with this problem. Various methods that can be used in conjunction with your family physician to help with the bed-wetting problem are suggested. For this informative booklet, circle 495.

"Cornmeal Cookery." Crisp, hot, flavorful corn breads add appeal to your daily menu. You will want this booklet containing a variety of recipes for economical, nutritious corn meal. For a free copy of this booklet, circle 431.

Help for Mothers. Because it washes, deodorizes, whitens and softens, **Diaper-Sweet** is a big help to new mothers. In soaking diapers it works two ways—as a deodorizer and a softener. Subsequent washing, with the addition of Diaper-Sweet, removes irritants and helps prevent diaper rash. For a free sample and further information, circle 388.

Multivitamins for Children. Lemon candy-flavored **Vi-Daylin,** made by **Abbott Laboratories,** provides eight essential vitamins in every daily teaspoonful. Now available in the new, 12-fl. oz. "Pressure Pak." Just press the button—and a golden stream of Vi-Daylin fills the spoon; no mess, no waste, no refrigeration. For a three-day sample, circle 488.

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on a splint. Tree branches, poles, even skis will do. Belts or straps will serve as binding. Do not probe or adjust any broken bone; you might only make it worse. If possible get the victim to shelter. If a spine injury is suspected be extremely careful in moving him. Keep him cheerful.

5. If a fallen branch or lost ski equipment lies on the trail, lift it out of the way.

6. Stay out of closed areas where no one can find you if you get hurt. Ski areas are closed off for good reason—such as frozen ski ruts or bare patches.

7. Be careful of avalanches on high, steep, and open slopes, especially after successive storms are followed by prolonged cold, which makes the surface shifty.

8. Be twice as careful when the temperature changes. Where you just made a safe turn 10 minutes ago, you may suddenly find a skidding crust has formed, or worse yet, a hard crust that softens from below, dangerous to everyone but the most expert. END

"Bad-Company" Myth

(Continued from page 32)

any fun. But it isn't. Man, it's like a morgue. I go in and nobody even takes any notice. I go out and nobody even asks where I'm going."

No sociology professor could have stated the boy's case more eloquently. Indeed, the youngsters themselves have a lot to say, if we will only listen. They have a way of going straight to the point, with a child's candor. Listen to these youngsters, interviewed in Detroit and neighboring communities:

Patti, 17, of Royal Oak: "Parents don't take enough interest in their children sometimes. So the kids feel their parents don't care and they look for someone else for love. Usually this gets them in trouble."

Nancy, 16, senior in a Detroit high school: "Oh, these kids that get in trouble are really nice kids. It's just that no one seems to care about them. They seem out to prove something all the time. I'm sure if their parents were interested in them they would stay out of trouble."

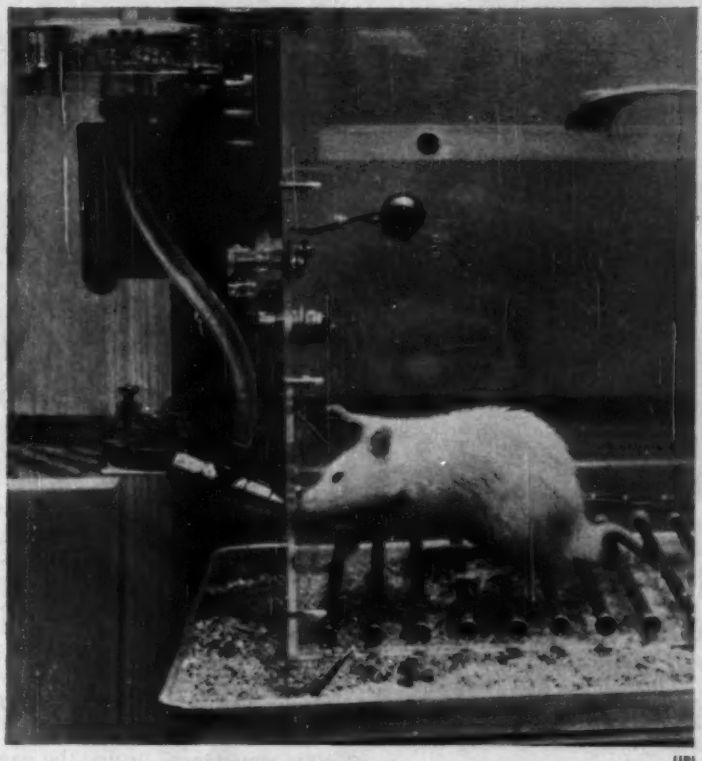
Tom, 14, of Bloomfield Township: "Some kids are bad but most of the time it is just a case of good kids in a bad situation. They all get together and someone says let's do something and away they go. I think a guy who feels that nobody cares about him will go off the deep end—to prove he's okay."

One of the best ways for parents to show real interest in their children is to open the house to them *and their friends*. When parents see their youngsters' friends, spend an evening with them, get to know them, the myth of bad company vanishes. Instead of faceless beings who are full of threat and possible danger, the child's friends become *people*—Bert, Edith, Phyllis, Ralph, and Jeremy. And by the same token, when all the youngsters in a group get to know each other's parents, the total parental image is likely to be a stabilizing force when the kids are on their own.

Mrs. Chapin suggests, "Parents can help by giving youngsters the opportunity to get together in their own homes, so that there is freedom and still some supervision. Youngsters can express their own ideas, see other homes and adults, and learn to accept society's rules for good behavior."

Parents also should know other parents. Many of the ills we ascribe to bad company actually stem from poor communications between parents. A 16-year-old girl asks if she may go to a party at a roadhouse 30 miles away and stay out until two a.m. When her mother indicates that this is a pretty steep request, the girl comes back with, "All the other kids are going. Their parents don't seem to have any objections."

Don't they? Just telephone one of



UPI

TEST NEW DRUGS ON TRAINED RAT

New York—This trained white rat is helping scientists study the effects of new drugs on behavior. The animal is taking part in a complex experiment in the testing of a new compound to combat mental depression, at a pharmaceutical company's research laboratories. In this specially designed box, the rat presses a lever in response to various signals, is rewarded with a small food pellet for each correct response.

the other mothers and see. The most likely reply will be, "Why I just objected to that party myself, and my Suzie gave me the same argument. She said all the other girls were going—and so naturally I thought you approved!"

The Parents Council of Secondary Schools in Jenkintown, Pennsylvania, got a little tired of this kind of guerrilla warfare and decided to make a clean breast of just what they, as parents, approved of and what they opposed. They composed a pamphlet entitled "We Can Agree," listing a number of basic propositions on which all parents saw eye to eye:

"Parents should know where, and with whom, their sons and daughters are spending their time . . .

"Parents should be at home and on call at all times when young people entertain . . .

"Young people should be encouraged to bring friends into the home, and parents should welcome the opportunity to meet their son's or daughter's companions and friends . . .

"A girl and her parents should agree on a definite time for return from a date. A boy should be given an opportunity to meet the parents of the girl and to discuss expected time of arrival at home."

The pamphlet contained this preamble: "Parents are eager to have young people enrich their lives through wholesome activities. However, parents need fortification to combat the pressure exerted by the plea of their young people that *everybody does it.*"

These parents have discovered the basic truth behind fears of bad company. They know that passing the buck and blaming a child's companion for whatever goes wrong is a circular process and that to the other parents in the group it may be your own child who is bad company.

The real culprit is *bad circumstances*—youngsters getting together with insufficient supervision, with a lack of parental knowledge of what they are doing or where they are, without parental guidance in situations which may be entirely new to them or a little too difficult for them to handle.

Here, then, are the basic ways parents can be helpful:

1. Know where your child is when he or she goes out at night. Know what sort of program is planned for the evening.

2. Meet your child's companions. Open your house to them. Get to know them as individuals and let them get to know you.

3. Make your values clear to your child. Don't hesitate to stand up for what you believe in. (Even if your child takes issue, your point of view will make its impression. Children often disagree to test you.)

4. Get to know, if only by telephone, the parents of your child's friends. If problems come up you can find a great deal of help—and much more effectiveness—in working them out together.

5. Spend a social evening with your child's friends once in a while. Invite them over for a barbecue or a game night—or any gathering that suits your fancy. Bridge the gap between the "two worlds" and show them parents and children live in the *same world.*

6. Keep the lines of communication with your child open wide. Talk even when there seems nothing to talk about. This may be the very time when something is troubling the youngster. Help him to open up.

7. Show your interest constantly. Don't let your child get the idea that you don't care much any more or that your only real interest is cracking the whip when things go wrong. Show your interest when things go right.

8. Talk to your child about his friends. Don't shut them out as though they were strangers. Friends are very near and dear to a child, and a good relationship with your child's friends will cement your relationship with him.

9. Encourage your child to entertain at home—and stay at his party. Show him that parental love means more than management and enforcement. It means warmth and sharing, and the ability to have joyful times together.

When you get right down to it, the "good company" your child needs is *you.* END

CANCER DETECTION: HOW MUCH DOES IT COST?

AN ESTIMATED 72 percent of all cancers can be detected for $25 or less, exclusive of biopsy fee (an additional $10 to $20).

About one-third of all cancer victims are being cured. With early diagnosis and prompt treatment, half of them could be saved with the knowledge, resources, and facilities we now have.

The cost of detection depends on the cancer's location. The easier it is to examine a part of the body directly, the more likely it is that a malignant tumor will be discovered in its early stages. Simpler examination methods can be used in such cases, and costs will be lower than when expensive equipment and more complicated methods of diagnosis are needed. And when cancer is diagnosed early, less extensive, and therefore less costly, treatment is usually required.

A skin tumor is a good example of cancer of an accessible site. Ninety-five percent of skin cancers are curable. The examination required is simple. If the tumor can be removed in the doctor's office, the cost for diagnosis will be the charge of a regular office visit, or perhaps slightly more to cover biopsy expenses. Sometimes treatment would be covered by the initial office charge. A pathologist's report, if requested, would cost an extra $10 to $20, depending on the time required for pathological examination.

Cancer detection tests have been developed for several body sites, and costs have been reduced enough so that these tests can be used in mass cancer detection programs. In Memphis and vicinity, for example, during a four-year period, Papanicolaou tests on 120,000 women detected cancer of the uterus in four out of every 1000 women examined.

—Condensed from an address by R. Lee Clark, M.D., of University of Texas, delivered at American Cancer Society Scientific Sessions, October 26-27, 1959.

Answer to Living Legends

(Continued from page 62)

The medical researcher is Dr. Jonas Salk, discoverer of the Salk vaccine against polio.

Winter's a wonderful time if growing youngsters and their parents stay healthy. Unicap multivitamins give you and your family that added protection and nutritional support when your diet may not give you all the vitamins you need. Start every day the Unicap way.

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MEDICINE IN ANCIENT EGYPT—one of a series of oil paintings, "A History of Medicine in Pictures," commissioned by Parke-Davis.

Great Moments in Medicine

Clothed in spotless linens and wearing a wig, as became the dignity of his status, an Egyptian physician of 1500 B.C. administers to a patient with symptoms of lockjaw. Although Egyptian doctors dominated medicine in the ancient world for thousands of years, this highly-respected practitioner could rely only on personal skill, judgment, and experience to combat such dreaded killers as tetanus.

Today, 3500 years later, due to advances in pharmaceutical research, tetanus is no longer a source of fear. Your modern physician employs safe and effective immunizing agents to protect you and your family from tetanus, polio, and many other infections that were killers of defenseless persons in former times.

Parke-Davis scientists are proud of their place in the living history of modern medicine, helping to provide the people of the world with the better health and longer life that come with better medicines.

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